IAEA Department of Safeguards

Long-Term Strategic Plan (2012-2023)

Summary

Foreword

As the verification arm of the International Atomic Energy Agency (IAEA), the Department of Safeguards assists the Agency in fulfilling its statutory objective to "accelerate and enlarge the contribution of atomic energy to peace, health and prosperity" worldwide, by verifying the peaceful use of nuclear energy on a daily basis.

The IAEA's operating environment is constantly evolving and the needs of its Member States are growing. Maintaining an effective and efficient safeguards system, therefore, requires the Agency not only to adapt to this evolution but also to prepare for future changes. That is why the Department of Safeguards engaged in a major strategic planning process, the outcome of which is reflected in its first ever Long-Term Strategic Plan. The result of an extensive internal collaborative process, the Plan represents the Department's view on the necessary strategies to be implemented and commensurate actions to be taken in pursuit of its strategic objectives in the period 2012-2023.

The Plan, of which this document is a summary, addresses various elements that define and affect the IAEA's verification work, including the conceptual framework for safeguards implementation, legal authority, technical capabilities, and human and financial resources. The Plan also considers how to enhance communication and strengthen cooperation and partnerships with IAEA stakeholders, whose support is crucial for the success of the Agency's verification mission, and sets various departmental improvements in motion.

The Plan will help to modernize safeguards implementation by focusing the Department's activities and allocating its resources to where they are most needed – thereby helping to deliver services to IAEA Member States more effectively and efficiently.

Herman M.G. Nackaerts

Deputy Director General and Head of the Department of Safeguards

Vision

The Department of Safeguards works towards the following vision:

IAEA verification contributes to a more secure world by helping to deter the proliferation of nuclear weapons and to advance States' aspirations for a nuclear weapons free world;

The IAEA is recognized as the pre-eminent international nuclear verification agency and has the confidence and support of the international community; and

Backed by the necessary legal authority, the required technical capabilities (expertise, technology and infrastructure), as well as adequate resources, the Department of Safeguards works as a team to effectively and efficiently carry out the IAEA's nuclear verification mission.

Strategic Context

In the years ahead, the Department of Safeguards has to be prepared to exploit new opportunities as well as to address numerous challenges relating to its nuclear verification mission.

Concerns over the spread of nuclear weapons remain due to cases of non-compliance with safeguards agreements concluded pursuant to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). In recent years, a number of serious verification cases have been addressed by the IAEA Board of Governors. To maintain confidence in nuclear non-proliferation, the international community relies on the Agency's safeguards system to deter proliferation through the *early* detection of potential misuse of peaceful nuclear programmes and to provide *credible* assurances of States' compliance with their commitments to use nuclear material and facilities solely for peaceful, non-explosive purposes.

To meet these expectations, the safeguards system must be responsive to changes in the nuclear landscape. In the civilian nuclear sector, there is growing interest in nuclear energy, both for power and non-power applications.[1] International nuclear cooperation between States is intensifying – with an expansion of trade in nuclear and related equipment, items and materials. Should the potential nuclear expansion materialize, this could bring many additional nuclear activities and facilities under safeguards. This comes against the backdrop of already expanding safeguards activities in recent years. Moreover, sensitive nuclear activities, such as enrichment and reprocessing may become more widespread. At the same time, globalization is aiding proliferation: growing global trade and the erosion of borders makes it easier for nuclear trade networks to covertly supply nuclear and related technology to interested parties, and the internet facilitates the uncontrolled spread of sensitive nuclear know-how. In short, demands on IAEA safeguards are growing and becoming more complex. All of this requires the Department to rethink how it can carry out its safeguards activities more effectively and efficiently: to implement smarter safeguards and invest its resources in areas where they are most needed.

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[1] According to the IAEA 'Nuclear Technology Review 2012' (GOV/2012/7) global nuclear electrical generating capacity is expected to grow between some 35% to 100 % by 2030. Moreover, small and medium sized reactors are attracting interest for non-electricity generation applications such as desalination of sea water, district heating, process heat for industrial application and coal liquefaction and hydrogen production. The Department expects the projections to continue to fluctuate, in part due to the tsunami-related nuclear accident in Japan. Its strategic planning methodology provides for their review every two years.

Besides implementing safeguards, the IAEA may be requested to carry out additional nuclear verification tasks, including those related to nuclear disarmament. The Agency has already been providing technical expertise to the preparation of a proposed Fissile Material (Cut-off) Treaty (FM(C)T). It has been requested to verify the Plutonium Management and Disposition Agreement (PMDA) between the United States of America and the Russian Federation, which involves the removal of 68 tonnes of weapons plutonium from the countries' defence inventories. Also, once again it may be asked to verify the freezing or dismantlement of nuclear weapons programmes. Thus, the Department will need to be prepared to further assist in these 'non-traditional' verification areas in future.

Nuclear technology will continue to advance. For example, third generation water-cooled reactors are under construction. Prototypes of fourth generation nuclear energy systems may be ready in the 2020s, with on-line deployment planned for the 2030-2040s. New types of power reactors are being developed, including transportable mini-reactors and floating nuclear power plants. Moreover, the first land-based prototype of a nuclear reactor for a military submarine, and associated nuclear facilities, in a non-nuclear-weapon State are being built. New enrichment processes may emerge, including plasma processes and laser processes. Pyrochemical processing of spent fuel has been of interest in the last decade. All of this suggests that the Department must prepare to safeguard new, more advanced types of nuclear installations in the future.

The pace of the scientific and technological evolution will offer important opportunities. For instance, computerized devices are evermore capable, and innovative technologies, such as artificial intelligence and virtual reality tools, are fast developing. High-speed digital data networks cover increasingly large portions of the globe. Wireless and satellite communication are more ubiquitous. Information fusion and search tools are ever smarter. Storage capacities continue to increase, making the storage of huge volumes of data possible and less expensive. Developments such as these provide the Department with opportunities to improve its technical capabilities.

Compounding these external developments are organizational challenges within the IAEA. While demands on the Agency look set to grow, its financial resources may not increase commensurately, requiring the Department to prioritize and realize further efficiencies in safeguards implementation. Moreover, the safeguards workforce is continually changing due to IAEA human resource policies and retirements. In seeking new talent, the Department will be competing with industry and national nuclear administrations over a small and potentially shrinking pool of qualified nuclear professionals. Thus, greater efforts are required to recruit, train and retain the safeguards workforce and to manage mission critical knowledge.

The support that States provide to safeguards is vitally important. The extent to which States grant the IAEA legal authority and support its full implementation, cooperate with the Agency in safeguards implementation and fund safeguards all affect the Agency's ability to carry out its mission. Yet, the views of States on safeguards matters have diverged in recent years. This has coincided with the Agency's growing international public exposure and sharply rising demand for information on its nuclear verification activities. In order to continue to enjoy States' confidence and support, their expectations for greater transparency regarding the processes underlying the IAEA's verification activities and the drawing of safeguards conclusions must be met through improved communication. The Department must also play its part in ensuring that the general public is informed of and understands the Agency's nuclear verification mission.

Strategic Objectives

The Department of Safeguards' three over-arching strategic objectives are to:

Deter the proliferation of nuclear weapons, by detecting early the misuse of nuclear material or technology, and by providing credible assurances that States are honouring their safeguards obligations;

Contribute to nuclear arms control and disarmament, by responding to requests for verification and other technical assistance associated with related agreements and arrangements; and

Continually improve and optimize departmental operations and capabilities to effectively carry out the IAEA's verification mission.

The Department pursues these objectives within the mandates provided by the IAEA Statute and the safeguards agreements that States have concluded with the IAEA: comprehensive safeguards agreements with non-nuclear weapon States based on INFCIRC/153 (Corrected); voluntary offer safeguards agreements with the five nuclear weapon States; item-specific safeguards agreements based on INFCIRC/66/Rev.2; as well as protocols additional to any of the above safeguards agreements, based on INFCIRC/540 (Corrected).

Strategies

In order to meet its strategic objectives, the Department has developed a set of strategies. These strategies are designed to help the Department overcome external challenges and take advantage of possible opportunities, address departmental weaknesses and build on existing strengths. The strategies cover various aspects of the Department's work, including conceptual, legal, technical, resource, partnership and communication aspects.

Conceptual Framework for Safeguards Implementation

Goal: To effectively and efficiently implement safeguards, detecting early the misuse of nuclear material and technology and drawing soundly-based safeguards conclusions.

States require *credible* assurances of compliance – or *early* warning of potential proliferation. Hence, it is vital that the Department continually improves its capabilities to draw soundly-based safeguards conclusions and to detect and report early any potential misuse of nuclear material and activities. The Department must focus its safeguards activities and resources where they matter most in terms of achieving safeguards objectives. Thus, the conceptual framework for safeguards implementation[2] will need to continue to evolve to help strengthen the effectiveness and to improve the efficiency of safeguards.

[2] The conceptual framework is the set of safeguards concepts, principles, objectives, processes and guidelines that govern the implementation of IAEA safeguards.

To this end, the Department will:

- Further develop the State-level concept[3] for the planning, conduct and evaluation of safeguards activities, and extend the concept's application to all States;
- Develop and implement customized State-level safeguards approaches[4] for all States, better taking into account relevant State-specific factors[5];
- Make safeguards implementation more objectives-based[6] and information-driven[7]; and
- Review and make the necessary adjustments to the Department's organizational structure, infrastructure, business processes, workforce competencies and working culture to support the continued evolution of safeguards implementation.

Legal Authority

Goal: To have safeguards agreements and additional protocols in force and fully utilized in all States, and to ensure that the IAEA's legal authority enables it to respond to evolving verification challenges.

The IAEA's legal authority is the fundamental basis for the Department's verification activities. It derives from the IAEA Statute and safeguards agreements, and defines the rights and obligations of the IAEA and States. It is key to both effective and efficient verification. In this context, the wider adoption of additional protocols is a particular priority. More generally, the Department can best perform when the IAEA's legal authority is universal, fully utilized and responsive to evolving proliferation challenges.

To this end, the Department will:

- Participate in efforts to promote the adoption and entry into force of comprehensive safeguards agreements and additional protocols and the rescission or modification of small quantity protocols;
- Seek to fully implement the IAEA's rights and obligations under safeguards agreements and protocols thereto; and
- Keep the IAEA's legal authority under continual review and bring to States' attention possible vulnerabilities.

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[3] The State-level concept is a holistic approach to safeguards implementation that considers a State and its nuclear activities and capabilities, as a whole.

[4] A State-level safeguards approach is a customized approach to implementing safeguards for a State, consisting of a set of safeguards objectives and applicable safeguards measures, implemented in the field or at Headquarters, to address those objectives.

[5] State-specific factors are safeguards-relevant, factual characteristics and features, both technical and non-technical in nature, that are particular to a State which may affect the way in which safeguards are implemented for that State.

[6] Safeguards activities are implemented to achieve the safeguards objectives for a State: *i.e.* State-level safeguards objectives established and pursued by the Agency to verify a State's compliance with its respective safeguards obligations, as well as underlying technical objectives established to help achieve them. Accordingly, the safeguards objectives differ between States, depending on the type of safeguards agreement they have concluded with the Agency, their nuclear activities and capabilities and/or other State-specific factors.

[7] Safeguards implementation is based on all safeguards-relevant information available to the Agency about a State. The information is used not only to draw safeguards conclusions, but also to plan the safeguards activities to be conducted with respect to that State in order to maintain those conclusions.

Technical Capabilities

Goal: To improve the Department's technical capabilities by making use of scientific and technological innovation, and to enhance its readiness to safeguard new nuclear technology and support new verification missions.

The Department needs the requisite technical capabilities in order to successfully carry out its nuclear verification mission and to improve the efficiency of its operations, both in the field and at Headquarters. Scientific and technological advancements will continue to offer important opportunities to enhance verification capabilities across the board, be it the collection, analysis and management of information; containment and surveillance at nuclear facilities; the analysis of nuclear material and environmental samples; or the conduct of inspections. The Department must also ready itself to safeguard new nuclear technologies, and to support new verification missions, as requested.

To this end, the Department will:

- Strengthen technology foresight to identify innovations with promising potential for verification purposes and conduct mission-driven research and development (R&D) planning;
- Strengthen technical tools for the collection, analysis and processing of information and employ modern, secure and user-friendly information management architecture;
- Improve verification measures and techniques;
- Deploy information and communication technologies to improve interconnectedness between the field and Headquarters;
- Strengthen the Safeguards Analytical Laboratories (SAL) and expand the IAEA Network of Analytical Laboratories (NWAL);
- Employ effective new/novel technologies for the detection of undeclared nuclear material and activities;
- Improve preparedness to safeguard new nuclear technologies and activities by developing new safeguards concepts and approaches and acquiring associated expertise and equipment; and
- Maintain readiness to provide technical expertise and/or to verify nuclear arms control and disarmament related arrangements and agreements.

Cooperation and Partnerships

Goal: To have effective cooperation and partnerships with IAEA stakeholders in support of the Agency's verification mission.

The Department is more likely to be successful when it works in partnerships with IAEA stakeholders. Enhancing cooperation between the IAEA and States is of particular importance to achieve greater effectiveness and efficiency in safeguards implementation. Effective partnerships with Member States are also key to developing the Department's technical capabilities. Also, by working together with industry, the Department can help ensure that nuclear reactors and other nuclear fuel cycle facilities are designed and constructed with safeguards implementation and proliferation resistance in mind. Moreover, companies trading in nuclear and related goods are receiving potentially

suspicious procurement enquiries, which can help the Department to detect first signs of undeclared nuclear-related activities.

To this end, the Department will:

- Provide guidance and training to States – particularly to States introducing nuclear power – on the implementation of their safeguards obligations to help ensure that all States have competent safeguards authorities and effective State or regional systems of accounting for and control of nuclear material (SSACs/RSACs);
- Seek to increase cooperation with States in safeguards implementation and, where possible, make greater use of effective SSACs/RSACs, to realize further efficiencies in safeguards implementation;
- Increase cooperation and improve coordination with Member State Support Programmes;
- Promote and support enhanced safeguardability in the design and modification of nuclear facilities;
- Participate in international efforts to increase nuclear facilities' resistance to proliferation;
- Engage States to increase the voluntary sharing of information, including on suspicious attempts to acquire nuclear and related technology and on export denials; and
- Share implementation experiences and good practices with other relevant organizations and entities, as appropriate.

Human Resources

Goal: To create and sustain a high-performing safeguards workforce whose knowledge, skills and abilities meet the needs of the Agency's verification mission and evolving safeguards implementation.

Staff and knowledge are the Department's key organizational assets. To protect and nurture these assets, the Department aims to recruit, develop and retain a workforce capable of meeting both current and future needs. It will also carefully manage its intellectual capital – safeguards knowledge – to sustain corporate memory.

To this end, the Department will:

- Conduct continual workforce planning, anticipating trends in the global nuclear sector, identifying the Department's human resource-related needs and building strategies to address the needs;
- Work to make the Department more capable of attracting and retaining high-calibre professionals;
- Seek to improve the recruitment processes at the Agency;
- Train and develop the safeguards workforce in ways that align associated activities with the Department's evolving needs; and
- Manage mission critical safeguards knowledge, improving its capture, sharing, use, and preservation.

Financial Resources

Goal: To maintain Member States' confidence in the cost-effective implementation of the nuclear verification programme through management excellence.

The Department will be managing the nuclear verification programme (Major Programme 4) against the backdrop of increasing demands and limited resources in the coming years, requiring an effective management approach from initial planning through actual implementation to monitoring and reporting of results.

To this end, the Department will:

- Project and prioritize programmatic needs through regular and systematic strategic planning and in accordance with policy guidance from Member States;
- Assess budgetary needs and seek sufficient and predictable funds for the nuclear verification programme with flexibility in their allocation, and prepare for unexpected expenses;
- Optimise the use of financial resources and seek further efficiencies through, for example, enterprise resource planning, quality management and cost-benefit analyses to guide decision-making; and
- Monitor and measure performance towards the achievement of desired results and increase transparency and accountability in reporting to Member States.

Communication

Goal: To increase knowledge of, confidence in and support for IAEA verification among Member States, other stakeholders and the public.

The openness and quality of the IAEA's communications on safeguards and verification matters is of key importance to its Member States and other stakeholders. Their knowledge of safeguards and how they are implemented must be enhanced. It is also important to ensure that the public understands the IAEA's verification mission. At the same time, the security of safeguards information is of paramount concern.

To this end, the Department will:

- Report safeguards conclusions and provide Member States with other information on safeguards and verification matters in a transparent and timely manner;
- Keep Member States and other stakeholders informed of the objectives, processes and measures involved in safeguards implementation and how safeguards implementation is being further developed;
- Keep stakeholders informed of changing proliferation challenges and their impact on safeguards;
- Communicate the IAEA's global nuclear verification mission to the public; and
- Maintain an appropriate balance between the security and availability of information, further improve physical and information security and enhance the Department's security culture.

Implementation and Performance

The Department's programmatic planning and implementation activities take place in the context of the Agency-wide Medium Term Strategy (MTS), which is issued every six years. The MTS is the framework for the formulation of the biennial Programme and Budget proposals.

The departmental Long-Term Strategic Plan complements the MTS by taking a longer term (12-year) view of the future and examining the Agency's verification-related activities in greater detail. It enables the Department to provide better information to IAEA Member States and serves as its input to the process of drafting the nuclear verification-related parts of the MTS. Together with the MTS, the Plan also helps in the preparation of the Secretariat's biennial Programme and Budget proposals. Accordingly, the Plan's implementation takes place through the existing Major Programme 4 (Nuclear Verification) implementation framework.

As a means of reporting progress in implementing the Plan, the Department intends to use the existing Agency-wide monitoring and reporting schemes to internally track work being carried out and report on the achieved results, along with the annual Safeguards Implementation Reports.

Appendix 1: Strategic Planning Methodology

To prepare the Long-Term Strategic Plan, the Department of Safeguards developed a dedicated strategic planning methodology, which was approved in October 2008. A departmental Strategic Planning Team was set up – made up of senior staff representatives from all Divisions as well as the Office of the Deputy-Director General for Safeguards and chaired by the Director of the Division of Concepts and Planning. The implementation of the methodology began in January 2009.

As a first step, the Department conducted an analysis of the Department's external operating environment to identify challenges and opportunities. In preparing the analysis, the Department consulted the IAEA Department of Nuclear Energy and the offices of the IAEA Director General. This was followed by an analysis of the Department's capabilities, identifying both strengths and weaknesses through a series of Strategic Planning Team and divisional meetings. Together, the two steps constituted a strengths, weaknesses, opportunities and challenges (SWOC) analysis.

A new set of high-level departmental strategic objectives was developed and approved by senior management. Using these, issues arising from the SWOC analysis were submitted to a risk assessment, in order to identify and prioritize the strategic issues facing the Department.

In a series of meetings, the Strategic Planning Team then generated proposals for long-term directions and mid-term actions to be pursued, which was followed by further divisional input. Individual staff members were also invited to contribute ideas through dedicated electronic discussion forums on the Department's internal website. The proposals were then developed into draft strategies. Senior management reviewed and endorsed the draft strategies to be documented in the Plan. The Plan itself was approved in August 2010.

The Plan is a 'living' document, to be periodically reviewed and updated. The Department's strategic planning methodology provides for the data, forecasts and analysis on which the Plan is based – in particular those related to the external environment – to be reviewed every two years in order to identify any developments which would require the Department to make adjustments. The assumptions underlying the risk assessment will also be reviewed. Based on that review, the risks may be re-assessed and strategies reconsidered and adjusted, as appropriate.

The entire Plan is to be reviewed and updated every six years: a new strategic planning process cycle is initiated and a new version of the Plan is issued, in time to serve as Department input to the drafting of the next MTS. In the case of major unexpected ('shock') events, an out-of-cycle review and update may be carried out.

Figure 1: Schedule for the review and update of the Long-term Strategic Plan