Establishing and Operating a National Nuclear Security Support Centre

Revision of IAEA-TECDOC-1734

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ESTABLISHING AND OPERATING A NATIONAL NUCLEAR SECURITY SUPPORT CENTRE

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ESTABLISHING AND OPERATING A NATIONAL NUCLEAR SECURITY SUPPORT CENTRE

REVISION OF IAEA-TECDOC-1734

INTERNATIONAL ATOMIC ENERGY AGENCY
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FOREWORD

In response to requests for IAEA support in developing, implementing and sustaining an effective national nuclear security regime, and drawing on the experience of some States, the IAEA developed a concept for the establishment of a national nuclear security support centre as a means to strengthen the sustainability of nuclear security in a State. This concept was introduced in IAEA-TECDOC-1734, Establishing a National Nuclear Security Support Centre, which was initially developed as a proof of concept draft document in 2007 and subsequently published by the IAEA in 2014.

In 2012, the IAEA established the International Network for Nuclear Security Training and Support Centres (NSSC Network) to facilitate cooperation, identification of best practices and sharing of information among States with an NSSC or those having an interest in developing one. The IAEA used IAEA-TECDOC-1734 as a reference when providing bilateral support to States on development of an NSSC. The NSSC Network members also used IAEA-TECDOC-1734 as a key reference for their activities in identifying and documenting good practices among centres. As the number of NSSCs in operation increased and the NSSC Network became a mature framework for cooperation, however, the IAEA and the NSSC Network members identified a number of improvements and additions that could be made to IAEA-TECDOC-1734 to increase its effectiveness as a resource and reference for States. This publication is a revision of IAEA-TECDOC-1734 reflecting improvements and additions developed by the IAEA and members of the NSSC Network.

The preparation of this publication would not have been possible without the contributions of Member States within the NSSC Network. The IAEA is grateful to all who contributed to the drafting and review of this publication. The IAEA officers responsible for this publication were J. Conner, Q. Rose, A. Kazennov and I.Y. Suh of the Division of Nuclear Security.

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1. INTRODUCTION

1.1. BACKGROUND

An effective national nuclear security regime provides for capabilities to prevent, detect and respond to criminal or intentional unauthorized acts involving, or directed at, nuclear material, other radioactive material, associated facilities or associated activities [1]. To remain effective over the long term, these capabilities should be developed systematically with sustained coordination among, and commitment by, relevant stakeholders and competent authorities in the State [2]. Each organization allocates sufficient human, financial and technical resources to carry out its nuclear security responsibilities and to routinely conduct maintenance, training and evaluation to ensure the effectiveness of nuclear security systems.

Based on an increasing number of requests for support in sustaining an effective national nuclear security regime, and drawing on the experience of some States, the IAEA developed a concept for the establishment and operation of a national nuclear security support centre (NSSC). The role of an NSSC is to support competent authorities, authorized persons and other organizations with nuclear security responsibilities in sustaining the national nuclear security regime at both the national and operational levels. This is achieved through programmes in human resource development (HRD), technical support and scientific support. In realizing these objectives, an NSSC also fosters nuclear security culture and enhances national coordination and collaboration among the various competent authorities involved in nuclear security.

In 2012, the IAEA established the International Network for Nuclear Security Training and Support Centres (NSSC Network) to facilitate cooperation, identification of best practices, and sharing of information among States with an NSSC or those with an interest in developing a centre. The current publication is intended for use by the IAEA and the NSSC Network as the primary reference for activities to support States with the establishment and operation of an NSSC.[1]

1.2. OBJECTIVE

The objective of this publication is to provide enhanced support to States in the establishment and operation of an NSSC. This publication is addressed primarily to decision makers responsible for nuclear security functions at the various competent authorities in a State, as well as managers and directors of established or planned NSSCs.

1.3. SCOPE

This publication presents a systematic approach to establishing and operating an NSSC as a means to strengthen the sustainability of nuclear security in a State. This publication provides specific practical guidance to States, detailing a straightforward decision making and project management process drawn from good practices in establishing and operating an NSSC and identified through the experience and lessons learned from States within the NSSC Network.

1.4. STRUCTURE

Following this introduction, Section 2 outlines the NSSC concept, including its core programme areas, functions and role within a State's nuclear security regime, and describes the systematic process presented in the publication. Section 3 provides guidance to States on how to determine the need for and feasibility of establishing an NSSC and offers information on several NSSC institutional models

[1] This publication is a revision of and supersedes IAEA TECDOC 1734. It reflects improvements and additions made to TECDOC 1734 by the IAEA and members of the NSSC Network.

that a State can consider. Section 4 covers formalizing coordination among stakeholders, developing a strategy and formally launching the NSSC as a national project. Section 5 provides information on establishing an NSSC using effective project management practices, taking a systematic approach to programme development, and operating it effectively over the long term. Lastly, Section 6 highlights the role that cooperation with additional national stakeholders and the international community can play in strengthening the effectiveness of an NSSC. The appendices contain worksheets, templates, detailed examples, and guides to support States with implementing the concepts described in the main text.

2. NUCLEAR SECURITY SUPPORT CENTRE CONCEPT

2.1. SUSTAINING THE NATIONAL NUCLEAR SECURITY REGIME

While responsibility for a State's nuclear security regime rests entirely with that State, binding international legal instruments include obligations on States parties related to sustaining the regime over the long term. The Amendment to the Convention on the Physical Protection of Nuclear Material, for example, states that "the State should establish or designate a competent authority which is responsible for the implementation of the legislative and regulatory framework, and is provided with adequate authority, competence and financial and human resources to fulfil its assigned responsibilities" [3]. The IAEA Nuclear Security Series publications also reaffirm the importance of ensuring the sustainability of the national regime.

Among the actions that competent authorities, authorized persons and other organizations with nuclear security responsibilities can take in support of Essential Element 12: Sustaining a Nuclear Security Regime in IAEA Nuclear Security Series No. 20, Nuclear Security Fundamentals, Objective and Essential Elements of a State's Nuclear Security Regime [1], items (a), (c), (d), (e), and (f) listed in paragraph 3.12 are of particular relevance to the establishment and operation of an NSSC [1]. These actions highlight the role of integrated management systems, nuclear security culture, human resource development, equipment maintenance, training, and applying best practices and lessons learned in sustaining nuclear security.

The concept for an NSSC integrates these functions into one or several related institutions to help ensure sustainability of the national nuclear security regime. Further detailed guidance on national and operational sustainability objectives and implementing actions that States can take to sustain a nuclear security regime can be found in IAEA Nuclear Security Series No. 30-G, Sustaining a Nuclear Security Regime [2].

2.2. ROLE AND FUNCTIONS

The role of an NSSC is to support competent authorities, authorized persons and other organizations with nuclear security responsibilities in sustaining the national nuclear security regime. The core functions of an NSSC in this role are the following:

— Human resource development, specifically through a national nuclear security training programme;
— Technical support services for nuclear security equipment lifecycle management;
— Scientific support services for provision of expert advice, analysis, and research and development (R&D) for nuclear security.

In addition to these core functions, an NSSC also fosters nuclear security culture and enhances national coordination and collaboration among the various organizations involved in nuclear security.

2.2.1. Human resource development

One of the main functions of an NSSC is HRD for nuclear security. Effective management of human resources is both an essential component of, and one of the main challenges in, sustaining a national nuclear security regime. At a macro level, HRD services aim to improve the effective utilization of the workforce as a whole, including activities such as resource planning, succession management and generic training strategies. While an NSSC may be involved in such activities at the national level, most NSSC human resource development programmes implemented by an NSSC are designed specifically to meet training needs and help bridge performance gaps of individual workers within organizations across the national nuclear security regime.

Section 5.1.1. provides a further explanation of suggested processes and methodologies for analysing training needs and developing a national nuclear security training programme through an NSSC. The IAEA has published guidance on HRD in other areas from which lessons learned and good practices can be drawn and applied to nuclear security [4].

2.2.2. Technical support

Competent authorities, authorized persons and other organizations with nuclear security responsibilities rely on specialized equipment to perform duties related to the prevention, detection of, and response to nuclear security events. The objective of technical support services for nuclear security is to ensure sustainable management of this equipment throughout its life cycle. Most equipment used in nuclear security is developed and sold by commercial vendors. Procurement contracts for such equipment typically include a limited warranty period with specific terms of service for certain maintenance tasks, including repair and calibration, to be provided by the vendor or contractor. As a result, NSSC technical support programmes typically focus on addressing gaps in these services after equipment warranty periods expire; but they can also support development and implementation of long term equipment management planning for the State as a whole. Such services commonly involve utilizing technical capabilities in a well-defined way by following existing operating procedures or guidelines associated with each piece of equipment (e.g. manuals or checklists). Section 5.1.2. provides further explanation on developing a national nuclear security technical support programme through an NSSC.

2.2.3. Scientific support

NSSCs also frequently provide scientific support services such as expert advice, analysis, technology testing and evaluation, and R&D for nuclear security. This type of assistance can help competent authorities, authorized persons and other organizations with nuclear security responsibilities to address specific scientific challenges that are not covered in existing procedures or guides and that need innovative thinking or specialized analytical capabilities. Section 5.1.3. provides further explanation on analysing scientific support needs and establishing a national nuclear security scientific support programme through an NSSC.

2.3. SYSTEMATIC PROCESS

This publication outlines a model systematic process for establishing and operating an NSSC (illustrated in Fig. 1). States can view this process as a flexible concept that can be customized according to national needs and circumstances. A systematic approach is one that can be applied to any process where there is a strong need for carrying out continuous improvement of individual or organizational performance. Continuous improvement is of particular importance to nuclear security, given the potential consequences of a nuclear security event. A systematic approach emphasizes analysis that is based on performance needs, tailoring programmes or activities to improve performance with ongoing evaluation

to determine the effectiveness of these programmes and activities. The subsequent sections and appendices address in detail each phase of the process represented in Fig. 1.

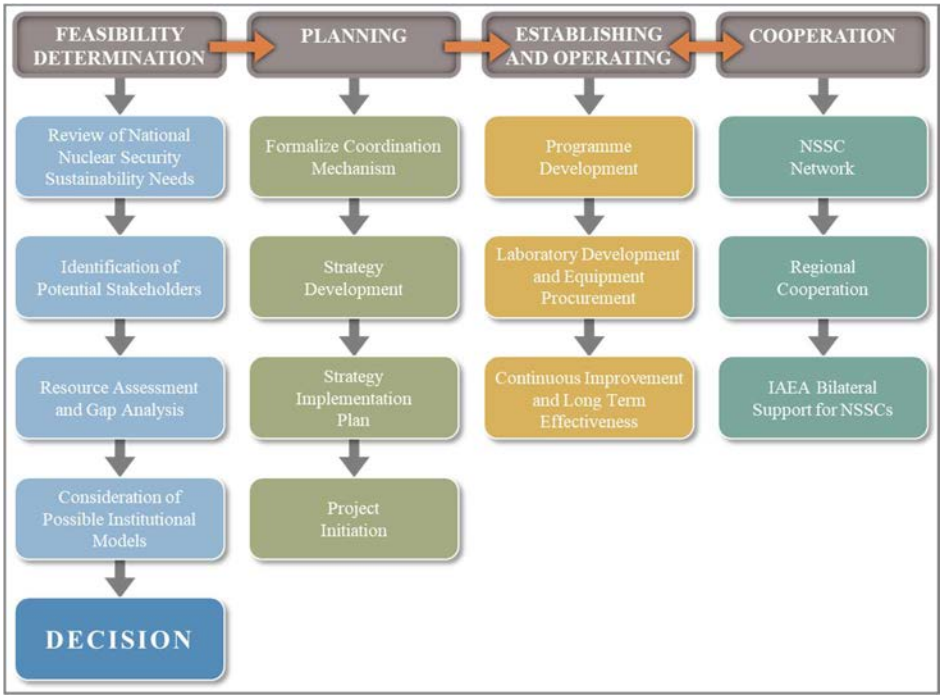

FIG. 1. Systematic process for establishing and operating an NSSC.

3. DETERMINING THE NEED FOR, AND FEASIBILITY OF, ESTABLISHING A NEW NUCLEAR SECURITY SUPPORT CENTRE

Some key events that might motivate a State to consider establishing an NSSC include: senior leaders committing to or mandating optimization of available resources for sustaining nuclear security; establishing or changing the scale or scope of a nuclear power programme; increasing the use of other radioactive material within the State; changes to the legislative and regulatory framework for nuclear security; changing and evolving nuclear security threats; or gaps and vulnerabilities identified by the State in the national nuclear security regime.

Establishment of an NSSC can be an effective approach to sustaining the national nuclear security regime and making optimal use of resources within the State. Making the decision to establish an NSSC is not one that States are advised to take lightly or hastily; instead, States are encouraged to first make a systematic determination of the need for, and feasibility of, establishing such a centre. If proper care is not taken at this stage, the State risks making significant investments in infrastructure and using valuable financial and human resources to create a new institution that was not needed.

After completion of the feasibility determination process, the State will likely have sufficient information to reach a decision on whether to establish an NSSC. If the State decides to move forward with establishing an NSSC, the outputs from the feasibility determination process will be useful for the State in implementing a national project to establish the centre. These outputs will include the general scope and operational focus of the NSSC programmes, a draft institutional model for the centre, a tentative list of NSSC stakeholders and a coordination mechanism to ensure effective operation and sustainability of the NSSC itself.

Conversely, the State may decide not to establish an NSSC at the end of the feasibility determination process. This is a logical and reasonable outcome if, for example: no significant needs or gaps are identified in HRD, technical support or scientific support for nuclear security; only minor gaps are

identified that can be addressed by means other than the establishment of an NSSC; or the State determines that the costs of establishing a centre outweigh the possible benefits.

3.1. REVIEW OF NATIONAL NUCLEAR SECURITY SUSTAINABILITY NEEDS

Before considering the establishment of an NSSC, there are two essential steps that States can benefit from completing which align with IAEA Nuclear Security Series Recommendations. First, States can ensure that "Nuclear security responsibilities of *competent authorities* designated by the State…including *regulatory bodies* and those *competent authorities* related to border control and law enforcement, and responsibilities for all *authorized persons*, are clearly identified and defined" [1]. Often, these roles and responsibilities are codified through a national legislative and regulatory framework. Secondly, States can establish a national nuclear security coordinating body or mechanism to ensure optimal cooperation among all organizations with nuclear security responsibilities. If a State does not have roles and responsibilities clearly identified and does not have a national nuclear security coordinating body in place, then it will be difficult for it to determine effectively whether there is sufficient need to establish an NSSC.

If the State has completed these two key steps in order to determine whether there is sufficient need to establish an NSSC, it can begin with an initial analysis of its ability to sustain the effectiveness of the nuclear security regime over time. This analysis can be initiated through official consultations, meetings or a focused workshop among competent authorities, authorized persons and other organizations with nuclear security responsibilities. For most States, the national nuclear security coordinating body or mechanism, ideally established through the national legislative and regulatory framework, is an appropriate forum for these consultations [5]. The goal is to review all aspects of the national nuclear security regime with a view to discussing any possible gaps or unintended overlaps in HRD, technical support and scientific support capabilities needed to sustain the regime.

Many States work with the IAEA to conduct a review of the national nuclear security regime in order to develop an Integrated Nuclear Security Support Plan (INSSP). The INSSP is used by the State to identify and document necessary improvements across the nuclear security regime into an integrated plan based on IAEA Nuclear Security Series publications. The INSSP is composed of the following major functional areas:

1) Legislative and regulatory framework;
2) Threat and risk assessment;
3) Physical protection regime;
4) Detection of criminal and unauthorized acts involving material out of regulatory control;
5) Response to criminal and unauthorized acts involving material out of regulatory control;
6) Sustaining a nuclear security regime.

There are actions indicated throughout the INSSP framework that the State can take to sustain the regime and that relate to NSSCs, but the most specific relevant actions are contained in Functional Area 6: Sustaining a nuclear security regime. If a State has an INSSP in place or is developing one, the INSSP process can be used to facilitate a coordinated approach among potential stakeholders in analysing sustainability needs in support of an NSSC feasibility determination. If the State does not have an INSSP in place or under development, then the national nuclear security coordinating body or mechanism could facilitate an NSSC feasibility determination. Other IAEA tools, such as the Nuclear Security Information Management System (NUSIMS) questionnaire, are available to support States in conducting a high-level self-assessment of the national nuclear security regime.

Regardless of the mechanism or tool the State uses at this stage of the feasibility determination process, the State does not focus on conducting a thorough analysis of needs within each organization related to HRD, technical support and scientific support. This deeper analysis will be conducted later and only if

the State concludes there are sufficient sustainability gaps across the nuclear security regime as a whole that could be addressed through the establishment of an NSSC.

3.2. IDENTIFICATION OF POTENTIAL STAKEHOLDERS

The sustainability of an NSSC depends upon its ability to offer services that meet the needs of relevant stakeholders. Therefore, it is essential that the State clearly identifies all the main stakeholders at the beginning of the feasibility determination phase. If the State has gained agreement that there are sufficient sustainability gaps across the nuclear security regime as a whole and wishes to proceed with consideration of an NSSC, it can work to clearly identify potential stakeholders of the centre and obtain further information from them. Regardless of the particular legal and regulatory framework, many States have found it useful to designate one institution within the national coordinating body or mechanism to lead this process. The lead institution can serve as the collector and disseminator of information for each organization, help to organize meetings and consultations and document any results and decisions.

Fig. 2 illustrates the functions of an NSSC and the relationship between various organizations with nuclear security responsibilities as the State progresses through each phase described in this publication. As seen in Fig. 2, an NSSC serves the needs of various stakeholders, but the stakeholders also provide input, feedback and support to the implementation of NSSC programmes throughout the lifetime of the centre.

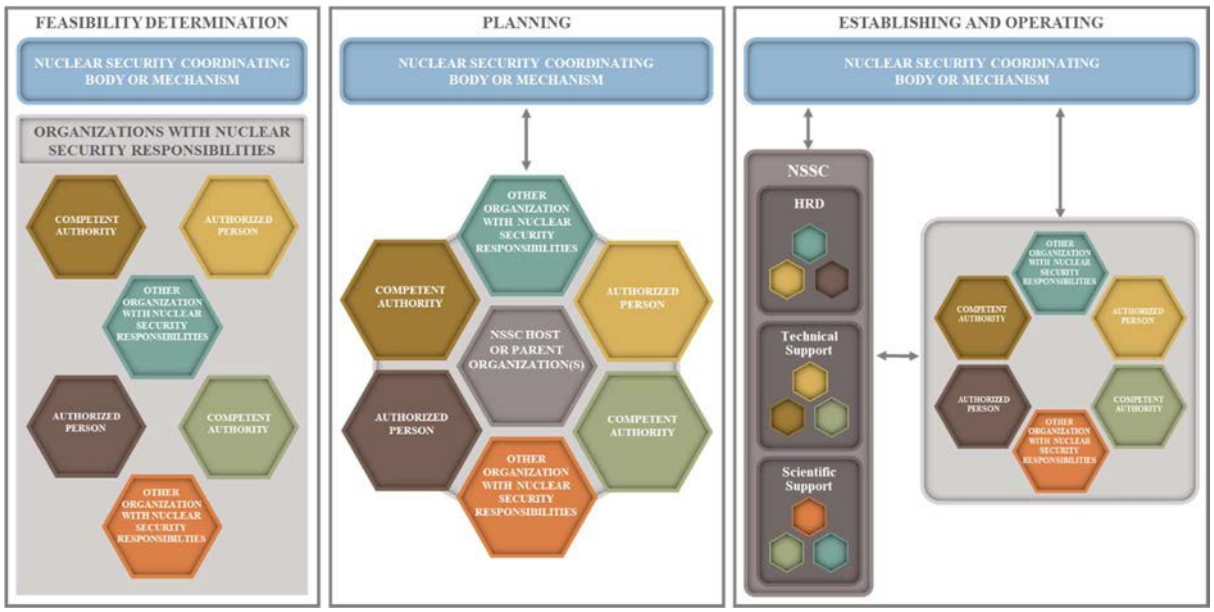

FIG. 2. NSSC relationships with stakeholders and functions.

The list of potential stakeholders is not limited to the organizations in the national nuclear security coordinating body, but could also include external stakeholders such as vendors and suppliers, the public and civil society, other States, and the IAEA or other international organizations. Consequently, the institution designated to lead the NSSC feasibility determination process could also be assigned to analyse the potential role of such external stakeholders at this phase and report to the national nuclear security coordinating body or mechanism on its findings.

3.3. RESOURCE ASSESSMENT AND GAP ANALYSIS

Once all likely stakeholders for an NSSC are identified, each stakeholder can conduct a structured and detailed assessment of its needs, resources and gaps. Such an analysis is a logical continuation of the State's review of nuclear security sustainability needs (see Section 3.1) and aims:

— To assess the HRD, technical support and scientific support needs and capabilities and identify gaps for each potential NSSC stakeholder;
— To collect sufficient data necessary to make a final decision on the feasibility of, and need for, the establishment of an NSSC.

A worksheet to support the resource and gap analysis for HRD, technical support and scientific support is provided in Appendix I.

The collation and analysis of data from the completed resource assessment and gap analysis are generally managed and coordinated by the institution designated to lead the NSSC feasibility determination process, working within, and reporting to, the national nuclear security coordinating body or mechanism. This information could be documented as Part 1 of a draft NSSC feasibility report (see Appendix II). The report could contain the following information:

1) General forecast of needs to sustain the nuclear security regime over the long term, both at the national and operational levels;
2) Identification of all main NSSC stakeholders;
3) Summary of the results of each stakeholder's resource and gap analysis;
4) Preliminary indication of improvements needed in HRD, technical support and scientific support programmes to close identified gaps.

Based on Part 1 of the draft feasibility report, if the organizations participating in the national coordinating body or mechanism agree that there are significant deficiencies in capabilities and resources needed to sustain the nuclear security regime, then the State can proceed to consider possible NSSC institutional models that could help address these needs.

3.4. CONSIDERATION OF POSSIBLE INSTITUTIONAL MODELS

One of the key lessons identified by NSSC Network members is that there is no universal approach to establishing and operating an NSSC. While most NSSCs adhere to the role and functions outlined in Section 2.2, there is considerable variation in how States implement the NSSC concept. The primary reason for variations is that NSSCs are customized to meet the specific needs and infrastructure of each individual State. Before making an official decision on establishing an NSSC, the State can use the information contained in the draft NSSC feasibility report to evaluate and consider several possible institutional models that could meet identified needs and close gaps without significantly exceeding available and forecast resources.

A number of States have established an NSSC as a new institution with entirely new programmes, dedicated infrastructure, staff and operating budget. Alternatively, some States have established an NSSC by refurbishing existing infrastructure and complementing or supplementing existing HRD, technical support or scientific support programmes within one or more institutions. Other States have established a virtual model, reflecting simply an enhanced administrative or networking structure to facilitate increased coordination among stakeholders on the core NSSC functions without investing in significant new infrastructure or refurbishments.

There is also wide variation in how States implement the NSSC core functions and in which technical areas of nuclear security the States decide to specialize or focus their NSSC programmes. Most NSSCs place strong emphasis on HRD programmes, while other States use their centres more for technical and scientific support functions. Some States have decided, based on the feasibility and needs analysis

process, to focus the NSSC programmes on security of nuclear material and facilities, while others have oriented their centres toward detection of and response to nuclear and other radioactive material out of regulatory control.

3.4.1. Cost–benefit analysis

In the next step of the feasibility determination process, the State can conduct a cost–benefit analysis of a limited number of possible institutional models that might meet the needs identified in the draft NSSC feasibility report.

A cost–benefit analysis is "a systematic technical and economic evaluation of the positive effects (benefits) and negative effects (disbenefits, including monetary costs) of undertaking an action" [6]. It seeks to make clear connections between effective funding usage and expected outcomes and is used in both planning and evaluation. In planning, cost-benefit analysis is used to predict whether the benefits of an activity will equal or exceed the costs, taking into consideration sustainability needs and existing resources. In evaluation, it is used to confirm that these benefits have been realized and that continuous improvements are implemented as necessary.

Cost analysis typically considers full life cycle costs including facility, operation, maintenance, human resources and training, as well as system upgrades costs. Costs can include capital, procedures and NSSC programme development costs as well as direct and indirect costs [7]. Benefit analysis is based on the anticipated positive impact and is often converted into monetary terms to allow cost comparison. In this context, the impact represents the NSSC's ability to meet national needs and successfully support sustainability of the national nuclear security regime by implementing the various institutional models under consideration. There exist intangible benefits which may be difficult to convert into monetary terms for cost comparison purposes, but because of their benefit can be considered based on the impact (e.g. promoting a stronger nuclear security culture).

A graph showing a sample cost–benefit analysis is shown in Fig. 3.

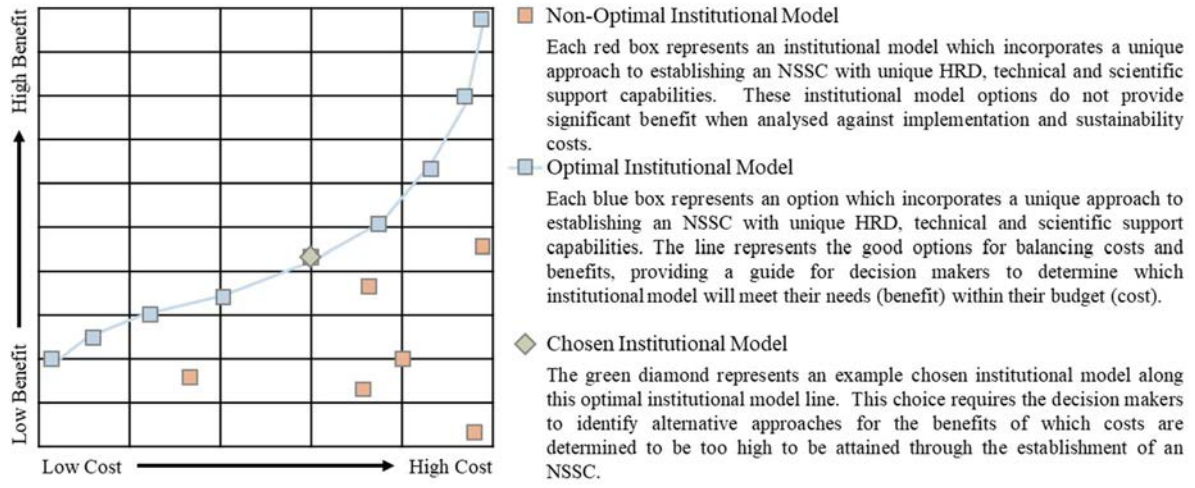

FIG. 3. Cost–benefit analysis chart.

The goal of a cost–benefit analysis is to ensure that the chosen institutional model fully satisfies State needs and that no further practicable measures can be implemented to further increase benefits or reduce costs [8].

Several sample institutional models, based on the real experience of NSSC Network members and reflecting a cost–benefit analysis, are provided in Appendix III.

3.5. MAKING A DECISION

After conducting a cost–benefit analysis of possible NSSC institutional models that could meet needs and close gaps identified in the draft NSSC feasibility report, the State is likely to have sufficient information to make a well-informed decision on whether to establish an NSSC. At this stage, States are encouraged to incorporate the findings of the cost–benefit analysis into Part 2 of the NSSC feasibility report and present the completed report to the national nuclear security coordinating body or mechanism for final review and decision. The coordinating body may wish to present the results of the feasibility report to other senior decision makers and managers to gain their commitment and ownership in the establishment and operation of the centre. This final report can serve as the foundation for launching a national project to establish an NSSC. In the case of a decision not to establish an NSSC, the final report can serve as a record or justification for the State's decision not to pursue an NSSC.

4. PLANNING FOR A NUCLEAR SECURITY SUPPORT CENTRE

When planning for an NSSC begins, it is assumed that the State has reached the decision to establish an NSSC following a feasibility determination process. If the State has followed this process carefully, much of the information contained in the final NSSC feasibility determination report will serve as a sound basis for initiating a national project to establish the NSSC following a systematic approach.

4.1. FORMALIZING A COORDINATION MECHANISM

Effective coordination among NSSC stakeholders is essential to the success of the centre. Following the feasibility determination process and after reaching a decision to establish an NSSC, some States have simply continued to use the existing national nuclear security coordination body to coordinate on development and operation of the NSSC, while some States have created a new dedicated NSSC coordination council or committee. Either mechanism can be successful as long as it provides an effective venue and framework for supporting coordination and cooperation among the stakeholders throughout the life cycle of the centre.

To ensure optimal cooperation at the national level in establishing and operating an NSSC, some States have found it useful to establish formal memoranda of understanding between NSSC stakeholders [9]. This can be particularly helpful in documenting roles and responsibilities for the NSSC, including identification of the NSSC host or parent organization, documenting the agreed scope of NSSC programmes and activities, and outlining any key administrative arrangements, such as resource- and cost-sharing among stakeholders.

Having a formalized coordination mechanism in place for the NSSC also promotes a sense of ownership among the relevant stakeholders and can help ensure that the programmes and activities of the centre are closely aligned with national nuclear security strategies, policies and needs.

4.2. STRATEGY DEVELOPMENT

After establishing a formal coordination mechanism and identifying roles and responsibilities among NSSC stakeholders, the State can begin strategic planning for the centre. Such planning is driven directly by a clear understanding of national needs as gained through the feasibility determination process and subsequently supported by programmes, processes and integrated management systems to ensure an effective organizational structure.

Aligning an NSSC with a clearly defined strategy is fundamental to its long term success and sustainability. Strategy development is a future-oriented activity that helps define the direction the NSSC will take in establishing its programmes and activities. NSSCs can learn continuously from the implementation of the strategy and improve or update the strategy as needed over time. Continual

improvement of the strategy includes continuously monitoring the external environment for changes to the assumptions on which the strategic objectives were based.

NSSCs can begin by developing a strategy map (see Fig. 4) that is informed by the organization's context (i.e. its roles and responsibilities within the national nuclear security regime) and the organization's values (i.e. what is important to the NSSC, such as the establishment of a competent workforce as an essential part of implementing and sustaining nuclear security). The context and values form the basis of the NSSC's mission and validate the reasons the NSSC exists. The NSSC mission forms the basis of the NSSC's strategic objectives or what the NSSC needs to accomplish. The NSSC's mission and objectives form the basis for the framework through which the NSSC will identify its core programme areas and services as well as its administrative arrangements, finances, internal processes, learning and growth.

Creating a strategy map will help an NSSC develop services that support the achievement of strategic objectives that are clear in scope, with well-defined and effective operational interfaces. The process of creating a strategy could also lead NSSC stakeholders to revisit and revise the proposed model for the centre identified during the feasibility determination phase because the institutional model originally chosen may no longer prove viable after further planning and analysis.

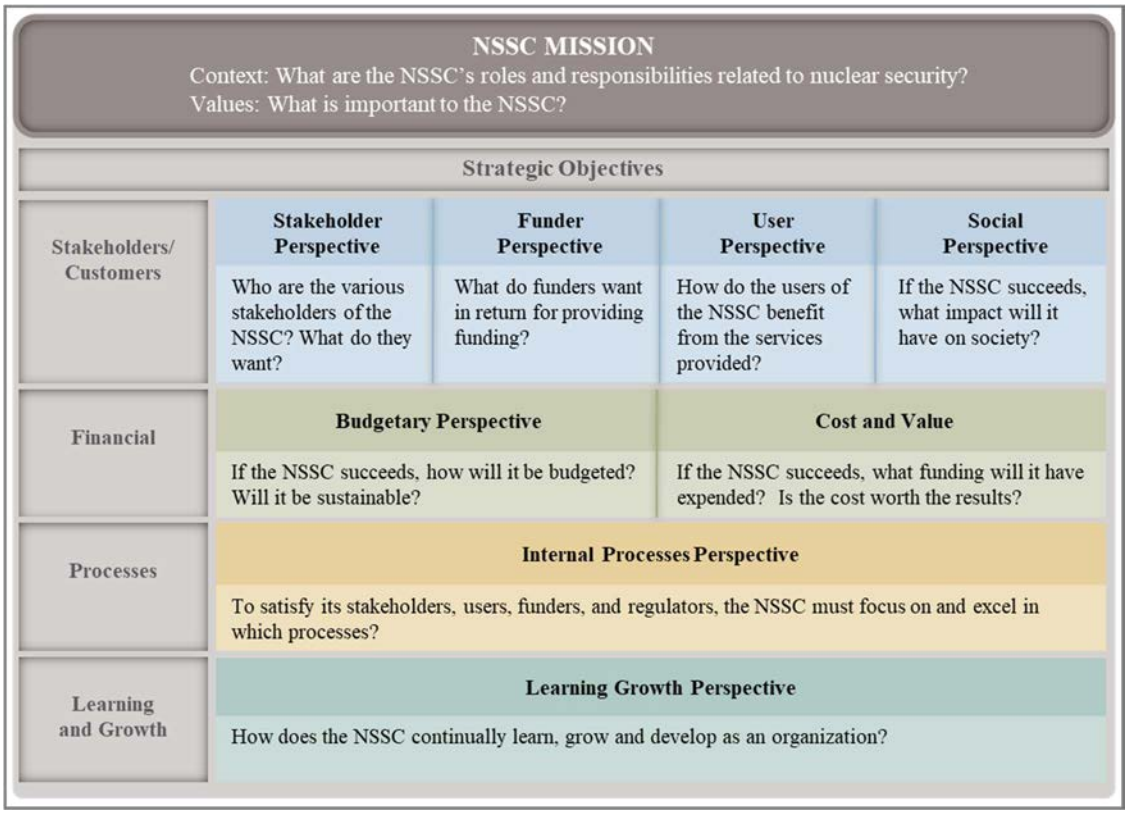

FIG. 4. NSSC strategy map template.

Appendix IV provides additional practical guidance on strategic planning for an NSSC.

4.3. THE STRATEGY IMPLEMENTATION PLAN

NSSCs may also create a documented strategy implementation plan, which will be closely aligned with the strategy development process outlined in 4.2. The result should be a clear working organizational structure based on the organization's programmes and processes. The plan might include the following elements:

— An overview of the NSSC's strategy;
— The organizational and operational structure of the NSSC;
— The national nuclear security needs analysis;
— The NSSC's strategic objectives;
— The NSSC's financial management system;
— The NSSC's project management and quality management policy;
— The NSSC's policies and procedures for cooperating and collaborating with its partners;
— The NSSC's communication protocol or plan for interfacing with internal and external stakeholders;
— The NSSC's resource management policies and procedures;
— The NSSC's policies and procedures for managing internal competencies;
— The NSSC's risk management strategy.

The underlying aim of the strategy implementation plan is to support the long term sustainability of the NSSC itself. Additional information on developing a strategy implementation plan is provided in Appendix V and a sample NSSC organizational structure is provided in Appendix VI.

4.4. PROJECT INITIATION

At this stage, the State can initiate a national project for establishment of an NSSC, referring to available publications and resources on effective project management principles and processes [10, 11]. The IAEA Division of Nuclear Security has developed a handbook for supporting States with implementing projects in nuclear security, which will be provided to States upon request at no cost. For the purposes of this publication, project initiation involves working to clearly identify and document the following project information:

— Goals and objectives;
— Scope, including operational requirements set out by the State;
— Constraints and assumptions;
— Risk management strategy, including assessment and documentation of project risks;
— Project control strategy, including issue management, change control, quality control and reporting procedures;
— Stakeholder management and communication plan;
— Timeline planning.

However, the State can take a graded approach to applying certain elements of the project management process depending on the institutional model chosen for the NSSC. For States establishing an NSSC with significant and costly new infrastructure, it is imperative to invest more time in certain phases of the project management process, such as developing a robust risk management and project control strategy and establishing a competent and qualified project team, led by a competent and qualified project manager, to ensure that resources are not wasted and to avoid major delays.

Key outputs during the project initiation phase, which can also serve as a guide for the long term development and operation of an NSSC, are documented as general requirements and technical specifications that are defined by the State. General requirements set out by the State describe the overall infrastructure and resources necessary for the NSSC to effectively serve its stakeholders and fulfil its role within the national nuclear security regime. Technical specifications include detailed performance requirements defined by the State for individual pieces of equipment and tools that are needed to support the NSSC programmes in HRD, technical and scientific support. These specifications can aid in the procurement process during the project and can serve as a record to support configuration management and continuous improvement for the centre as new needs may arise in the future.

5. ESTABLISHING AND OPERATING A NUCLEAR SECURITY SUPPORT CENTRE

At this stage, the State will have gathered sufficient information and put together a robust plan to establish and operate a centre that is tailored to meet the State's needs for sustaining the national nuclear security regime. In order to achieve long term effectiveness and sustainability of the NSSC and to ensure that the right capabilities are developed and resources are acquired over time, the State can take a systematic approach to programme development.

5.1. PROGRAMME DEVELOPMENT

While the entire process for establishing and operating an NSSC described in this publication is designed to be systematic, Sections 5.1.1.–5.1.3 describe in further detail how a systematic approach can be applied to programme development for each of the three NSSC core functions.

5.1.1. Human resource development

NSSC human resource development programmes are designed to meet national needs that are based on an analysis of jobs with nuclear security functions throughout the various organizations within the nuclear security regime. These organizations can range from organizations responsible for the use or storage of nuclear or other radioactive materials to those responsible for the protection of borders, implementation of a nuclear security detection architecture and response to nuclear security events. Workers in these organizations can have jobs that focus entirely or partly on nuclear security functions and duties.

The scope of NSSC human resource development programmes typically focuses on job-specific training activities rather than education [12]. Training is a combination of skill-building activities, including coaching and instruction, with the purpose of preparing an individual or team to perform a specific task, job or a series of jobs. Training is tailored to meet specific needs (e.g. solving a performance problem, using new or unfamiliar equipment, complying with a regulatory mandate).

To further develop the competence of individuals for current and future roles within a State's nuclear security regime, the NSSC can work to optimize the State's training resources. This is accomplished by improving effectiveness through the use of job performance as the basis for training and the sharing of curriculum and training methods among competent authorities (and other States where possible) to prevent and reduce unnecessary duplication of effort. To that end, NSSCs can apply a systematic approach to training (SAT). An SAT is a training approach that provides a logical progression from the identification of the knowledge, skills and attitudes necessary to perform a job to the development and implementation of training to achieve these competencies. Additionally, an SAT includes an evaluation of the training. An SAT is typically broken down into five phases: analysis, design, development, implementation and evaluation [13]. Appendix VII provides examples of good practices in applying an SAT. While all phases of implementing an SAT are important, the analysis and evaluation phases can have the most significant impact on the success of training in driving performance improvement. For this reason, a template is provided in Appendix VIII to support States in conducting an initial overall human resources and training needs analysis.

For NSSC human resource development programmes to be successful, all phases of an SAT and all aspects of a training programme are carefully managed. This process involves establishing an organizational structure, clearly defining the roles and responsibilities for all organizations and persons involved, developing training programme processes and procedures, and implementing training programme activities. Training programme management is particularly important for the curriculum development process. Other training programme processes involving formally established procedures and management oversight may include scheduling training; registering trainees; procuring and

controlling training materials and equipment; selecting and training instructors; periodically reviewing and updating courses; identifying training locations; and coordinating with and supporting other organizations. Appendix IX provides a training management plan template that can be used to help organize and manage an NSSC training programme.

5.1.2. Technical support

As with HRD programmes for an NSSC, development of a technical support programme can also be approached systematically. NSSC technical support services are generally oriented toward sustainable management of nuclear security related equipment owned and operated by organizations within the national nuclear security regime throughout the equipment life cycle. Equipment life cycle management is broad and includes equipment selection; maintenance tasks such as calibration, software support and repairs; and equipment upgrades. Equipment life cycle management follows a cyclical series of steps that begin with the identification of needs and end with an evaluation of services performed and provided to stakeholders focusing on continuous improvement. By taking this approach, the NSSC and its stakeholder organizations with responsibilities in equipment life cycle management can implement preventive maintenance and condition monitoring best practices, decreasing equipment downtime and overall maintenance costs.

The first step in taking a systematic approach to developing a technical support programme begins during the NSSC feasibility determination process when a high-level need is identified and stakeholders commit to developing a technical support programme through an NSSC. As a part of the project planning process, the State can conduct a thorough technical support needs assessment by conducting an inventory of the equipment owned and operated by the various NSSC stakeholders and identifying criteria to determine which equipment can be managed with technical support from the NSSC. The technical support criteria can include stakeholder preferences, technical soundness, feasibility and cost effectiveness. After establishing the NSSC technical support programme, the NSSC can monitor and evaluate services provided to ensure State needs are fully satisfied and strengthened, and gaps or challenges are identified and addressed.

To support this systematic approach, NSSCs can develop a technical support plan for equipment life cycle management, which can guide the NSSC's services provided to stakeholders for the following tasks:

— Monitoring the usage, configuration control and inventory of instrumentation;
— Equipment condition monitoring, including electronic state of health monitoring and data analysis;
— Routine preventive and corrective maintenance practices, including periodic inspections, testing and calibration;
— Identifying critical components (hardware, firmware and data collection and evaluation software) for each instrument and their expected lifetimes;
— Investigating possible suppliers for critical components and determining their availability;
— Preparing a long term maintenance plan and identifying measures to ensure spare parts supply and flexibility to accommodate possible modifications, adaptations and upgrades.

If the NSSC technical support programme for equipment life cycle management also includes the selection and management of an external equipment maintenance provider, then the technical support plan can also include defining preventive and corrective maintenance activities and reporting protocols for the selected contractor. Radioactive check sources for radiation detection equipment calibration and testing also necessitate processes and procedures for acquisition and management that can be included in the technical support plan. Configuration management is another essential element of equipment maintenance that can be addressed in the technical support plan to help ensure consistency between design specifications and other documentation and installed or deployed equipment in the field. Configuration management changes can be the result of significant intentional changes based on

operating experiences, new maintenance needs identified, and technical developments and modifications necessary to update ageing or obsolete components [14]. Lastly, equipment life cycle management includes implementing a maintenance training programme to improve system availability and maintenance provider skills as well as to decrease maintenance costs by reducing manufacturer support demands.

Figure 5 illustrates a systematic approach to technical support programme development, aligned with core capabilities for equipment life cycle management. Appendix X provides a technical support plan template.

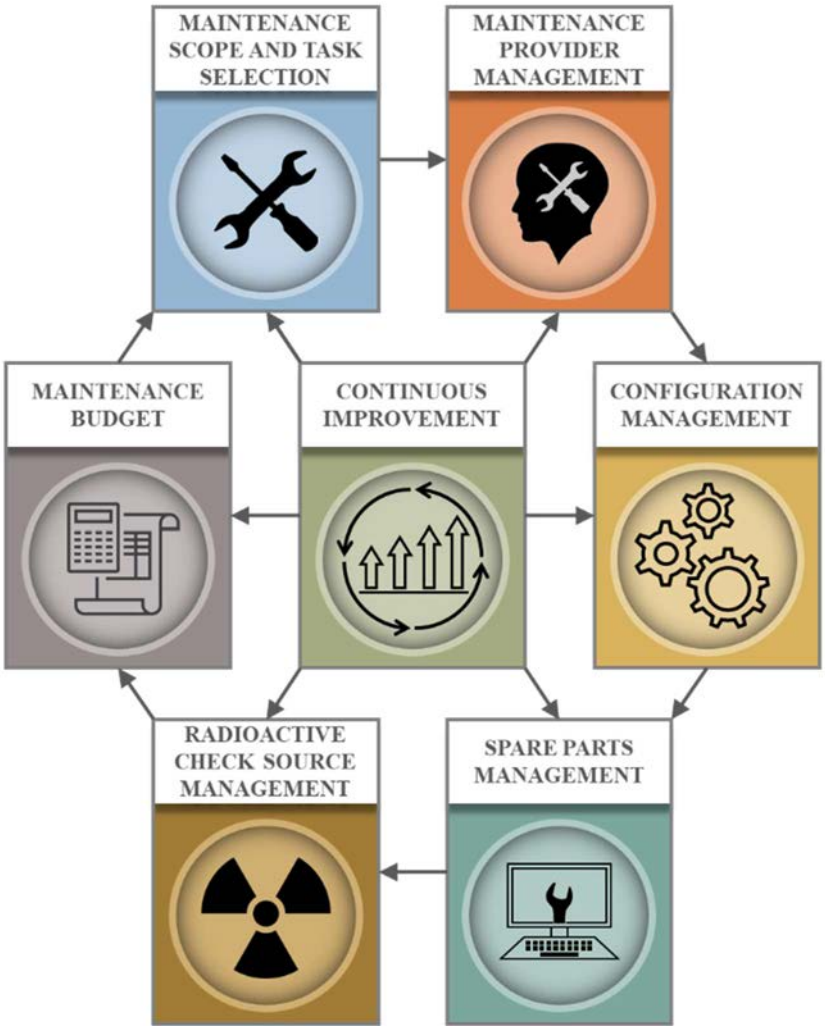

FIG. 5. Systematic approach to equipment life cycle management core capabilities.

5.1.3. Scientific support

As a part of the NSSC feasibility determination process, consensus will have been reached between stakeholders about the general need and feasibility for development of scientific support services. Any analysis of gaps and resources and the institutional model of NSSC selected for development would inform any NSSC programme development in scientific support. A key feature of most NSSC scientific support programmes is that they often include advanced subject matter expertise and might necessitate significant infrastructure investments, depending on the type of scientific support service to be performed. Therefore, taking a systematic approach to developing NSSC programmes in scientific support can present unique challenges. In comparison to HRD and technical support, scientific support services can include longer time horizons for analysing needs and for evaluating the effectiveness of

services. For example, extensive R&D programmes for new nuclear security technologies might not be necessary because the commercial marketplace for most nuclear security equipment is well developed and capable of addressing most needs. Identifying a need for establishing an NSSC programme in this area may be the product of many years of the State having developed its nuclear-related infrastructure more broadly and consequently developing unique material measurement or nuclear security requirements defined by the State. Evaluating the effectiveness of such R&D programmes is also not as straightforward as evaluating the impact of most HRD or technical support programmes. Nonetheless, many NSSCs still endeavour, to the extent possible, to establish programmes in scientific support based on analysis of needs and to tailor these programmes toward evaluating effectiveness in improving performance within the national nuclear security regime.

NSSC scientific support services for provision of expert advice to competent authorities or analytical support in response to a nuclear security event typically are based on a clearly defined role for the NSSC within the national nuclear security regime [15]. This could be documented in various official policies, formal procedures and guidelines within the State including:

— Nuclear security laws and regulations;
— National detection strategy;
— National response system and response plan;
— Concepts of operation (CONOPS);
— Standard operating procedures (SOPs).

For such scientific support services, exercises and other similar performance tests at the national level can help in the evaluation of the effectiveness of the NSSC's programmes in these areas.

An example list of possible scientific support services and tasks is provided in Table 1.

TABLE 1. EXAMPLE AREAS OF SCIENTIFIC SUPPORT AND RELATED TASKS

Example Areas of Scientific Support	**Example Tasks**
R&D	R&D on new instruments, techniques or technologies for nuclear security
	Collaboration and exchange between academic, scientific and policy communities
	Resources such as scholarships and fellowships for students including opportunities for laboratory research
	Participation in international nuclear security initiatives and related exercises or exchanges pertaining to scientific support
Expert advice and support	Support for regulatory inspections, as needed
	Remote support on alarm assessment using expert advice and remote spectra evaluation
	Remote or on-site analytical or operational support
On-site operational support to field teams	Operational support to field teams of stakeholders in response to material out of regulatory control (e.g. expert advice to law enforcement teams, threat object neutralization, safety assessment or consequence analysis)
	A mobile expert support team (MEST) (provides specially trained subject matter experts and comprehensive knowledge on the use of radiation detection and measuring devices or equipment)
	Manage or support major public events using radiation detection systems

Example Areas of Scientific Support	Example Tasks
Development of regulatory, planning, operational, and procedural documents	Support for the regulatory body in development of regulations
	Support for the development of CONOPS and SOPs for MEST activities
Technology testing	Establish and manage operating equipment test beds or testing laboratories
	Test new technologies and the efficiency and sensitivity of the existing systems
Monitoring functions	Monitor ambient radiation (environmental monitoring)
	Monitor individuals' radiation exposure (retrospective dosimetry, whole body counting)
Crime scene and evidence management	Support evidence handling and chain of custody
	Support evidence transport and storage
	Provide connection to traditional forensics and support of law enforcement teams on radiological crime scene investigations
Material analysis and interpretation	Capabilities and expertise for in-field categorization of nuclear and other radioactive material
	Operating advanced laboratories equipped with various analytical techniques to analyse nuclear and other radioactive material
	Nuclear forensics activities and expertise
	Operating a national nuclear forensics library or registries of nuclear and other radioactive materials

5.2. LABORATORY DEVELOPMENT AND EQUIPMENT PROCUREMENT

Many NSSCs identify the need to procure a variety of nuclear security equipment in support of programmes in HRD, technical and scientific support. In particular, NSSCs frequently develop specialized equipment laboratories to support programmes in particular technical areas of nuclear security, such as physical protection of nuclear or other radioactive material and associated facilities; radiation detection techniques for front line officers; or nuclear forensics.

As with other aspects of establishing and operating an NSSC, taking a prescriptive approach to developing such laboratories and procuring related equipment is not recognized as a good practice. The experience of States has shown that it is not effective or sustainable to embark on establishing an NSSC with a preconceived list of laboratory equipment to be acquired for the centre. The NSSC feasibility determination process, the planning and strategy development phase and the systematic approach to programme development are designed to form the basis for NSSC laboratories and equipment requirements to be set out by the State. If the State follows these steps carefully, then the need to develop any equipment laboratories and procure related equipment will become apparent and the use and maintenance of these facilities and equipment throughout the lifetime of the centre will be much easier for the State to manage.

The State's identification of operational requirements and performance specifications for any equipment to be procured for the NSSC is a critical component of planning for an NSSC (see Section 4.4). The design phase of an NSSC human resource development programme or the technical support plan for the centre will also typically document needs for any equipment to be procured and related infrastructure to be developed.

5.3. CONTINUOUS IMPROVEMENT AND LONG TERM EFFECTIVENESS

As emphasized throughout this document, analysis of needs, evaluation of services and continuous improvement are vital to the long term effectiveness of an NSSC. Most NSSCs that are successful work proactively to obtain feedback in various ways from all stakeholders on the effectiveness of the centre's programmes. This feedback allows NSSCs to measure whether the services provided have led to the desired outcomes in sustaining the national regime. The systematic approaches to programme development and implementation described in Section 5.1 adhere to this process. Key principles of continuous improvement include commitment among senior management, clearly communicated programme goals, integrated management systems, and basing the implementation of improvements on data, facts and the results of a cost–benefit analysis [16].

5.3.1. Integrated management systems

The role of integrated management systems in sustaining nuclear security is identified in IAEA Nuclear Security Series No. 20, Objective and Essential Elements of a State's Nuclear Security Regime, under Essential Element 12: Sustaining a Nuclear Security Regime:

> "A nuclear security regime ensures that each competent authority and authorized person and other organizations with nuclear security responsibilities contribute to the sustainability of the regime by… developing, implementing, and maintaining appropriate and effective integrated management systems."

In IAEA Nuclear Security Series No. 30-G: Sustaining a Nuclear Security Regime, conducting effective planning and organization is identified as a State responsibility achieved, in part, through emphasizing and promoting the importance of integrated management systems [2].

An integrated management systems approach combines all components of individual management systems related to technical, human and organizational factors, viewing the system as a whole and focusing on the interactions between the individual systems [17]. Viewing the system as a whole will result in consistency across management system objectives and in implementing a comprehensive continuous improvement process. When applicable, it is crucial that the integrated management systems developed by an NSSC is consistent with and complementary to the management system of the organization that leads or operates the NSSC.

An integrated management system typically includes the following functional categories: management responsibility, resource management, and quality management [18]. An integrated management system combines the management of these functional categories into a single, coherent framework and provides a basis to measure the effectiveness and efficiency of the system [16]. Management responsibility registers management's commitment to the integrated management system approach and the actions and activities management agrees to which will effectively demonstrate and communicate their commitment. Management can demonstrate support to ensure any informal management systems align with the formal management system. Resource management details the types of resources needed and how these resources will be sustained, including infrastructure and human resources. Quality management details the standards for determining whether an NSSC's activities meet its objectives, helping an NSSC align its mission with implementation of its strategy through programmes and processes. There are many different approaches to developing and implementing quality management systems [15]. Detailing processes within these functional categories includes capturing the hierarchy of integrated processes and subprocesses that govern the NSSC programmes and activities and identifying who will be responsible for implementing and improving these processes.

5.3.2. Self-assessment and technical exchanges

NSSCs have also found it beneficial to perform more holistic periodic self-assessments to identify needed improvements to the centre. Appendix XI provides a list of technical bases upon which an operational NSSC can conduct a self-assessment or provide information in preparation for a technical exchange with other centres, based on the structure and contents of this publication.

Regardless of the method employed, centres are encouraged to clearly document how the results of the self-assessment or technical exchange will be used (i.e. what actions will be taken as a result) to drive improvement in NSSC performance.

5.3.2.1. Key Performance Indicators (KPIs)

Self-assessments can also be approached from the standpoint of identifying and tracking key performance indicators (KPIs). KPIs can be used to identify potential problem areas, stimulate action, document management efforts and reinforce improvements in behaviour. KPIs adequately map and identify causal linkages (root causes, precursors, events and outcomes) and consistently, accurately and reliably measure what they are designed to measure. They also provide information relevant to management decisions and actions, facilitate accurate and detailed comparisons, lead to correct conclusions and are comprehensible to the personnel responsible for implementing change. Detailed guidance on developing KPIs using five broadly applicable principles is provided in IAEA Nuclear Energy Series No. NW-T-2.1, Selection and Use of Performance Indicators in Decommissioning [19]. Although the examples included in Ref. [19] focus on decommissioning of nuclear and related facilities, the guidance on developing KPIs can be universally applied.

6. INTERNATIONAL AND REGIONAL COOPERATION

While the primary role of an NSSC, as a national institution, is oriented toward sustaining the nuclear security regime, NSSCs can benefit from regular or periodic exchange with centres in other States. States may be able to save resources and make further improvements to an NSSC by learning from internationally recognized good practices and lessons learned. The IAEA provides a range of support to States in facilitating such cooperation at regional and international levels, in particular through the NSSC Network.

6.1. NSSC NETWORK

6.1.1. Mission and objectives

The mission of the NSSC Network is to contribute to global efforts to enhance nuclear security through an effective and collaborative network of nuclear security training and support centres, carried out through the following primary objectives:

— Encouraging cooperation and supporting joint activities among NSSCs;
— Identifying and documenting best practices for NSSCs;
— Strengthening information sharing among NSSCs.

6.1.2. Meetings and activities

The mission and objectives of the NSSC Network are served through a wide range of activities related to NSSC programmes in HRD, technical and scientific support, including:

— Developing and maintaining a database of NSSC Network members worldwide, indicating NSSC operational status, location, capabilities and areas of technical specialization;

— Developing and maintaining tools to support information sharing on training courses and other events hosted by NSSC Network members;
— Identifying commonalities and gaps in NSSC programmes;
— Documenting and sharing experiences in planning, establishing and operating various institutional models of NSSCs;
— Supporting NSSCs in taking a systematic approach to programme development based on a structured assessment of national nuclear security regime needs;
— Emphasizing continuous improvement, quality management and sustainability for NSSCs;
— Building and development of NSSC cooperation through regional and subregional networks;
— Disseminating lessons learned and feedback from nuclear security capacity building–related experiences;
— Providing a forum for technical and scientific exchanges among NSSC Network experts and trainers in a wide range of nuclear security areas and themes;
— Offering scientific support to build capacity for responding to nuclear security events;
— Coordinating with other relevant international networks and initiatives to strengthen nuclear security.

The NSSC Network holds an annual meeting, organized by the IAEA, which is open to participation from all IAEA Member States. The annual meeting serves as the official decision making mechanism of the NSSC Network. During this meeting, the Network holds plenary sessions on key topics and themes relevant to NSSCs, selects new leadership for the Network and convenes Working Group Sessions to plan activities and discuss priorities of the Network for the upcoming year. The Network also convenes smaller, ad hoc topical, regional, or subregional meetings throughout the year to implement specific tasks or activities agreed upon by the Working Groups, or to address an emerging issue identified by the Secretariat and Network leadership.

The activities of the NSSC Network are supported by the NSSC User Group on the IAEA's Nuclear Security Information Portal (NUSEC).[2] The IAEA provides the NSSC Network with a secure, restricted access, web-based platform through which to share information and facilitate collaboration among Network members. Each NSSC Network member is given a dedicated national-level profile in the NSSC Network Database on NUSEC, as well as an institutional profile for each NSSC officially listed by the State, to be managed and updated by designated points of contact. The NSSC Network uses the NSSC User Group on NUSEC as the primary record keeping and file storage mechanism for all NSSC Network meetings and other activities.

6.1.3. Network membership

While the annual meeting of the NSSC Network is open to all IAEA Member States, only official NSSC Network members and Observers are allowed to participate in the activities planned by the Working Groups throughout the year and to have access to all Network files and resources stored and hosted on NUSEC. For this reason, any State that has established or is considering establishing an NSSC is highly encouraged to join the NSSC Network. Membership in the Network affords such States not only the opportunity to learn and benefit from best practices and lessons learned identified by NSSCs around the world, but it also can help States in optimizing and saving resources through cooperation with centres in the NSSC Network.

NSSC Network membership is open to all IAEA Member States. Requests for membership are made in writing to the IAEA Division of Nuclear Security through the State's official channels for formal correspondence with the IAEA Secretariat.

[2] User Groups: NSSC. International Network for Nuclear Security Training and Support Centres. https://nusec.iaea.org/portal/UserGroups/NSSCs

Other organizations that do not represent a State but are involved in, or are planning to become involved in, the provision of HRD, technical and scientific support in the area of nuclear security can request to become an NSSC Network Observer. Observers may attend and make contributions during meetings, but are not entitled to take part in the NSSC Network's decision making process or the election of Network or Working Group Chairs or Vice Chairs.

Requests for Observer status are sent through official channels to the IAEA Division of Nuclear Security and to the Network Chair. Candidates for Observer status will be presented for the endorsement of Network members at the Annual Meeting.

6.2. REGIONAL COOPERATION

The NSSC Network has also facilitated the creation of complementary regional subnetworks for States that have expressed an interest in working together on NSSC-related issues. Even if a State's NSSC does not participate in the NSSC Network, regional and subregional cooperation among States with centres can be beneficial. For example, during a State's feasibility determination or planning phase for an NSSC, the State may find that an NSSC in a neighbouring State has capabilities and resources that it is willing and able to share. In this case, the State may be able to save resources and costs through regional cooperation. At a minimum, most States have found basic information sharing on programmes and activities among centres within a region to be of value and benefit.

6.3. IAEA BILATERAL SUPPORT FOR NSSCS

The IAEA offers expert missions to Member States who are interested in establishing an NSSC or improving the effectiveness of an existing centre. The IAEA can provide further support, subject to the availability of resources, in a variety of areas, including the following:

— NSSC feasibility determination and planning;
— Analysis of national needs in HRD, technical and scientific support;
— Implementation of an SAT;
— Instructor training and development;
— Development of technical and scientific support capabilities, including provision of equipment;
— Assistance with self-assessment for operational NSSCs;
— Facilitation of technical exchange among NSSCs.

Appendix I

STAKEHOLDER RESOURCE ASSESSMENT AND GAP ANALYSIS WORKSHEET

The objective of this worksheet is for the State to conduct a self-assessment through collection of relevant information on the roles and responsibilities of each possible NSSC stakeholder within the national nuclear security regime, with a view to identifying available resources and gaps needed to sustain the regime at the national and operational levels through programmes in human resource development, technical support and scientific support.

INSTRUCTIONS: Complete the form by responding to the questions. Provide enough detail to accurately capture your organization's roles and responsibilities within the national nuclear security regime. Additional instructions for certain items in the form are indicated in italics.

I.1. PART I: STAKEHOLDER ROLES AND RESPONSIBILITIES FOR SUSTAINING NUCLEAR SECURITY

Stakeholder Organization: _____

1.	Describe the organization's overall mission and responsibilities within the State. *(Include areas outside of nuclear security as well.)*	
2.	Provide a description of the organization's roles and responsibilities within the national nuclear security regime and cite any relevant national legislation and regulations governing these roles and responsibilities.	
3.	List relevant organizational units within the organization that have nuclear security responsibilities.	
4.	List primary internal procedures, policies, orders or directives related to the organization's nuclear security roles and responsibilities [e.g. concept of operations (CONOPS), standard operating procedures (SOPs), training policy].	

5.	Does the organization currently implement a training programme related to its roles and responsibilities within the national nuclear security regime? *(If yes, describe the training programme here and complete the Stakeholder Resource and Gap Analysis Worksheet Part II, Section A.)*	
6.	List any facilities and related infrastructure (e.g. classrooms, lecture halls or auditoriums, training laboratories, simulation tools, exercise areas) that are available within the organization for use in nuclear security training.	
7.	Does the organization have any training needs related to its nuclear security roles and responsibilities that are not currently being addressed? If so, how did it identify these needs?	
8.	List any technical equipment owned and operated by the organization in order to perform its roles and responsibilities for nuclear security. *(Include general information on types of equipment, approximate number of units owned and operated, typical application of the equipment for nuclear security, related information technology or communication systems. Avoid including sensitive information, as necessary.)*	
9.	Does the organization currently implement a technical support programme related to its roles and responsibilities within the national nuclear security regime? *(If yes, describe the technical support programme here and complete the Stakeholder Resource and Gap Analysis Worksheet Part II, Section B.* ***NOTE****: The objective of technical support services for nuclear security is to ensure sustainable management of technical equipment throughout its life cycle, such as through maintenance, calibration and repair services.)*	

10.	Does the organization have any technical support needs related to its nuclear security roles and responsibilities that are not currently being addressed? If so, what are these needs and how were they identified?	
11.	Does the organization currently implement a scientific support programme related to its roles and responsibilities within the national nuclear security regime? *(If yes, describe the scientific support programme here and complete the Stakeholder Resource and Gap Analysis Worksheet Part II, Section C.* ***NOTE:*** *NSSCs frequently provide scientific support services for provision of expert advice, analysis, technology testing and evaluation, and research and development (R&D) for nuclear security. This type of assistance to competent authorities, authorized persons and other organizations with nuclear security responsibilities is needed when a specific scientific challenge arises that is not covered in existing procedures or guides, and innovative thinking, specialized analytical capabilities or R&D are utilized to address the specific scientific challenge.)*	
12.	Does the organization have any scientific support needs related to its nuclear security roles and responsibilities that are not currently being addressed? If so, how were these needs identified?	
13.	List any facilities and related infrastructure, such as equipment laboratories or analytical laboratories, available within the stakeholder organization for use in nuclear security technical support or scientific support.	

I.2. PART II: CAPABILITY ASSESSMENT FOR PROGRAMMES IN TRAINING, TECHNICAL AND SCIENTIFIC SUPPORT

A. TRAINING			
	Assessment Questionnaire	**Response**	**Comments**
1.	**Training Programme Management**		
1.1	Does your organization conduct training that is applicable to your roles and responsibilities within the national nuclear security regime? If no, which organization is responsible for training implementation? How do you communicate and work with the training organization?	☐ Yes ☐ No	
1.2.	Does your organization have a training policy approved and actively supported by senior management?	☐ Yes ☐ No	
1.3.	Is there a specific position responsible for training within the organization? Can you provide an organizational chart for the training organization?	☐ Yes ☐ No ☐ Yes ☐ No	
1.4.	Do you have documented processes and procedures to manage training?	☐ Yes ☐ No	
1.5.	Does your training organization evaluate the documented training processes and procedures regularly?	☐ Yes ☐ No	

	Assessment Questionnaire	Response	Comments
2.	**Instructor Staff Qualification and Development**		
2.1.	Does your organization have requirements set by the State for instructor training and qualification?	☐ Yes ☐ No	
2.2.	Does your organization have a sufficient number of qualified instructors to implement your training programmes?	☐ Yes ☐ No	
2.3.	Do you evaluate instructor performance? If so, how?	☐ Yes ☐ No	
2.4.	Does your organization have an instructor training programme or curriculum to qualify instructors?	☐ Yes ☐ No	
3.	**Systematic Approach to Training**		
3.1.	Does your organization use a systematic approach to training?	☐ Yes ☐ No	
3.2.	Has your organization conducted a job and task analysis, or a job competency analysis?	☐ Yes ☐ No	
3.3.	Has your organization identified job or position performance measures (knowledge, skills and attitudes required by the State to perform tasks to identified standards)?	☐ Yes ☐ No	
3.4.	Has your organization conducted an analysis of training required by the State to perform tasks (training needs analysis)?	☐ Yes ☐ No	

	Assessment Questionnaire	Response	Comments
3.5	Did, or does, your organization design the training programme according to training objectives and a training programme description?	☐ Yes ☐ No	
3.6.	Did, or does, your organization develop, review, pilot, improve and approve training material, both for instructors and trainees?	☐ Yes ☐ No	
3.7.	Does your organization estimate the amount of training resources, facilities and tools needed (i.e. instructors, classrooms, equipment, training aids, simulators)? If so, describe the approach your organization used to determine the estimates.	☐ Yes ☐ No	
3.8.	Does your organization evaluate the adequacy of facilities and tools? If so, how? Does your organization assess the performance of instructors? If so, how?	☐ Yes ☐ No ☐ Yes ☐ No	
3.9.	Does your organization maintain training records, reports, examination results and feedback from trainees, instructors and observers?	☐ Yes ☐ No	
3.10.	Does your organization perform in-training evaluation? Does your organization perform post-training evaluation?	☐ Yes ☐ No ☐ Yes ☐ No	

B. TECHNICAL SUPPORT			
	Assessment Questionnaire	**Response**	**Comments**
1.	**Maintenance Management Programme**		
1.1	Does your organization have an official policy or mandate, approved and actively supported by senior management, for equipment maintenance?	☐ Yes ☐ No	
1.2.	Has your organization designated a single point of contact to oversee and manage all activities related to the maintenance of equipment and infrastructure?	☐ Yes ☐ No	
1.3.	Does your organization have a written technical support plan that defines and documents processes and procedures in place to effectively manage the maintenance of equipment and infrastructure?	☐ Yes ☐ No	
1.4.	Does your organization have a maintenance organization chart that is current and complete with fully defined areas of responsibility?	☐ Yes ☐ No	
2.	**Maintenance Scope and Task Selection**		
2.1.	Does your organization have a complete and current list of all assets (equipment) that are critical to the success of the system mission?	☐ Yes ☐ No	
2.2.	Does your organization track, analyse and categorize all equipment failures?	☐ Yes ☐ No	

	Assessment Questionnaire	Response	Comments
2.3.	Does your organization have a list of routine maintenance procedures designed to identify or prevent impending system failures?	☐ Yes ☐ No	
2.4.	Does your organization have a list of corrective maintenance procedures designed to return the system to design functionality if a failure occurs?	☐ Yes ☐ No	
2.5.	Does your organization routinely review and revise the routine and corrective maintenance procedures to ensure continued effectiveness and applicability?	☐ Yes ☐ No	
3.	**Maintenance Provider Management**		
3.1.	Are the system operators responsible for cleaning their equipment and are they trained to perform selected levels of operator-based maintenance?	☐ Yes ☐ No	
3.2.	Have system operators been trained to perform periodic inspections on their equipment and report problems?	☐ Yes ☐ No	
3.3.	Is system maintenance completed by in-house experts? If not, is system maintenance contracted to outside organizations?	☐ Yes ☐ No ☐ Yes ☐ No	
3.4.	Do maintenance contracts adequately cover identified failure modes and routine maintenance needs?	☐ Yes ☐ No	

	Assessment Questionnaire	Response	Comments
3.5.	Do maintenance contracts identify and stipulate minimum standards for work quality and timely response?	☐ Yes ☐ No	
3.6.	Are all maintenance actions routinely and formally documented?	☐ Yes ☐ No	
4.	**Spare Parts Management**		
4.1.	Does your organization have an existing spare parts inventory system?	☐ Yes ☐ No	
4.2.	Does the parts inventory system provide an accurate and complete record of information for each inventory item? Are parts specifications included in the master database along with usage, vendor information and warranty information?	☐ Yes ☐ No ☐ Yes ☐ No	
4.3.	Is the accuracy of your spare parts inventory regularly measured and does it meet a 95% or above accuracy rating?	☐ Yes ☐ No	
5.	**Radioactive Check Source Management**		
5.1.	Does your organization currently possess radioactive check sources of the appropriate isotopes and activity to support maintenance and training efforts?	☐ Yes ☐ No	
5.2.	Do your radioactive check source use, storage and accountability processes align with local and national regulations and requirements?	☐ Yes ☐ No	

	Assessment Questionnaire	Response	Comments
5.3.	Are radioactive check sources subject to a formal and comprehensive accountability and security verification regime?	☐ Yes ☐ No	
5.4.	Are processes and procedures in place to properly dispose of radioactive check sources once their useful life has been exceeded?	☐ Yes ☐ No	
6.	**Configuration Management**		
6.1.	Did your organization develop a standards or design document for configuration management?	☐ Yes ☐ No	
6.2.	Does your organization possess a comprehensive list of procedures, drawings, documentation and configuration settings which accurately captures the current configuration of the installed equipment?	☐ Yes ☐ No	
6.3.	Does your organization have a formal and systematic change control process in place to evaluate, implement and control proposed changes to the system?	☐ Yes ☐ No	
6.4.	Does your organization have a formal review process to routinely verify the recurrence and accuracy of configuration-controlled items?	☐ Yes ☐ No	
7.	**Maintenance Budget**		
7.1.	Does your organization have an annual budget specifically set aside to address maintenance needs?	☐ Yes ☐ No	

	Assessment Questionnaire	Response	Comments
7.2.	Does your organization allocate appropriate resources to the maintenance programme and does management understand the impact of maintenance resource allocation on the success of the organization's mission?	☐ Yes ☐ No	
7.3.	Does the maintenance budget consider past budget levels as well as realistically project budget levels to meet actual needs?	☐ Yes ☐ No	
8.	**Continuous Improvement**		
8.1.	Has your organization implemented a comprehensive self-assessment programme to measure and track the effectiveness of system maintenance processes and procedures?	☐ Yes ☐ No	
8.2.	Does your organization measure, track and act on specific KPIs for each self-assessment item?	☐ Yes ☐ No	
8.3.	Are your KPIs specific, measurable, achievable, relevant and time-based?	☐ Yes ☐ No	
8.4.	Is there a formal process in place to track progress towards addressing identified continuous improvement issues?	☐ Yes ☐ No	

C. SCIENTIFIC SUPPORT			
	Assessment Questionnaire	**Response**	**Comments**
1.	**Research and Development**		
1.1	Does your organization engage in R&D for nuclear security? If so, describe the main areas of R&D and indicate which other organizations within the national nuclear security regime, if any, you have cooperated with to conduct R&D.	☐ Yes ☐ No	
1.2.	Is your organization involved in collaboration and exchange between academic, scientific, and policy communities related to nuclear security?	☐ Yes ☐ No	
1.3.	Is your organization able to provide resources such as scholarships, fellowships and internships for students in fields relevant to nuclear security, including opportunities for laboratory research?	☐ Yes ☐ No	
2.	**Expert Advice and Support**		
2.1.	Is your organization required by the State to provide expert advice to assess unusual radiation detection alarms?	☐ Yes ☐ No	
2.2.	Does your organization have subject matter experts available and procedures in place to provide remote expert support, such as evaluation of measurement data taken in the field?	☐ Yes ☐ No	
2.3.	Does your organization have a mobile expert support team (MEST) established to help stakeholders with on-site operation? If so, please describe the resources available as part of this team.	☐ Yes ☐ No	

	Assessment Questionnaire	Response	Comments
2.4.	Does your organization provide expert advice to stakeholders in selection of technical equipment, based on proposed applications and operational requirements defined by the State?	☐ Yes ☐ No	
2.5.	Does your organization provide technology and equipment testing services for stakeholders?	☐ Yes ☐ No	
2.6.	Does your organization support stakeholders responsible for major public events using MEST and expert capabilities?	☐ Yes ☐ No	
2.7.	Does your organization provide support to the regulatory body with developing nuclear security regulations?	☐ Yes ☐ No	
2.8.	Does your organization aid in the development of the concept of operations (CONOPS), standard operating procedures (SOPs) or other national procedures or plans (e.g. national response plan) for nuclear security?	☐ Yes ☐ No	
3.	**Crime Scene and Evidence Management**		
3.1.	Is your organization capable of identifying nuclear security implications and the risk of seized material to first responders, law enforcement personnel, and the public? If yes, is this capability documented?	☐ Yes ☐ No ☐ Yes ☐ No	

	Assessment Questionnaire	Response	Comments
3.2.	Does your organization have documented procedures governing activities performed within a crime scene?	☐ Yes ☐ No	
3.3.	Has your organization identified and documented limitations or has the State set out requirements for evidence acceptance at the examination facility or facilities?	☐ Yes ☐ No	
3.4.	Does your organization's evidence storage location implement appropriate site security?	☐ Yes ☐ No	
3.5.	Is the evidence within your organization maintained in accordance with national rules for management of evidence until the evidence is no longer needed for the investigation or legal proceedings?	☐ Yes ☐ No	
3.6.	Is the evidence consisting of, or containing, radioactive or nuclear material destroyed in compliance with regulatory requirements of your organization?	☐ Yes ☐ No	
3.7.	Does your organization have a complete and current list of all assets (equipment) that are critical to the success of the system mission?	☐ Yes ☐ No	

	Assessment Questionnaire	Response	Comments
4.	**Material Analysis and Interpretation**		
4.1.	Does your organization have a laboratory or laboratories capable of accepting and analysing samples of nuclear and other radioactive material, for example in support of nuclear forensics investigations? *(If no, skip to question 4.7.)*	☐ Yes ☐ No	
4.2.	Are your organization's laboratory and personnel equipped and trained to maintain chain of custody for evidence?	☐ Yes ☐ No	
4.3.	Does your organization's laboratory have appropriate licences to receive, handle and store nuclear and other radioactive material?	☐ Yes ☐ No	
4.4.	Does your organization's laboratory staff have sufficient training to conduct nuclear forensics analysis?	☐ Yes ☐ No	
4.5.	Does your organization's laboratories have validated analytical instrumentation, infrastructure and procedures, as well as documented protocols?	☐ Yes ☐ No	
4.6.	Has your organization's laboratory communicated with law enforcement experts regarding methods and standards acceptable for use in a court of law?	☐ Yes ☐ No	

	Assessment Questionnaire	Response	Comments
4.7.	Does your organization have the capability to perform in-field categorization of nuclear or radioactive material?	☐ Yes ☐ No	
4.8.	Does your organization have transportation protocols in place to move radioactive and nuclear materials and contaminated evidence?	☐ Yes ☐ No	
4.9.	Does your organization have the capability to collect as evidence and sufficiently characterize nuclear or radioactive materials out of regulatory control?	☐ Yes ☐ No	
4.10.	Does the laboratory staff have the ability to communicate findings to a non-technical entity?	☐ Yes ☐ No	
4.11.	Does the laboratory have the ability to isolate and analyse small samples of nuclear or other radioactive material collected from contaminated evidence?	☐ Yes ☐ No	
4.12.	Does your organization have facilities to undertake examinations of contaminated evidence?	☐ Yes ☐ No	
4.13.	Does your organization have protocols in place for the removal of radioactive contamination?	☐ Yes ☐ No	

Appendix II

NUCLEAR SECURITY SUPPORT CENTRE FEASIBILITY REPORT TEMPLATE

An NSSC feasibility report can be developed to summarize all sustainability needs and available resources identified during the feasibility determination process, including consideration of possible NSSC institutional models. The final report can be presented to the national nuclear security coordinating body or mechanism for final review and making a decision as to whether the State will proceed with establishing an NSSC.

II.1. PART 1

II.1.1. Introduction – overview of the national nuclear security regime

[Provide a general forecast of needs to sustain the nuclear security regime over the long term, both at the national and operational level. Include considerations related to any anticipated major changes in the regime, such as introduction of a new national nuclear power programme or changes to relevant laws and regulations for nuclear security. This section is intended to provide background information on why the State is currently considering establishing a national nuclear security support centre.]

II.1.2. Potential NSSC stakeholders

[List the potential stakeholders of an NSSC – relevant competent authorities, authorized users and other organizations in the national regime that would make use of or contribute to the NSSC programmes. Include a brief description of each stakeholder's roles and responsibilities within the national nuclear security regime.]

II.1.3. Available resources for and gaps in sustaining the national nuclear security regime

[Provide a brief summary of each stakeholder's responses to the Resource Assessment and Gap Analysis Worksheets Part I and Part II (if applicable), provided in Appendix I, capturing key resources and gaps for each stakeholder. Then present the most common and highest priority needs and gaps that exist in the areas of HRD, technical support and scientific support for nuclear security within the State, based on analysis of all stakeholders' responses to the Resource Assessment and Gap Analysis Worksheets Part I and Part II (if applicable).]

II.1.4. Preliminary NSSC feasibility determination

[Provide a preliminary assessment of whether the State's nuclear security sustainability needs and gaps can be effectively addressed through establishment of an NSSC or whether another option is available and preferable. If establishing an NSSC is considered to be an effective option for meeting nuclear security sustainability needs, then proceed to completing Part II of the report as explained in Section II.2.]

II.2 PART 2

II.2.1. Possible NSSC institutional models

[Based on the summary information contained in Sections II.1.3. and II.1.4. of this appendix, document here possible institutional models that could meet identified needs, without significantly exceeding available and forecasted resources. Several factors to consider when identifying possible institutional models include the following:

— Core functions (HRD, technical support and scientific support);
— Technical focus areas (e.g. nuclear security areas – detection of nuclear and other radioactive material out of regulatory control, security of nuclear materials, response to intentional unauthorized acts, computer and information security);
— Institutional model (e.g. single organization, distributed model with multiple institutions);
— Parent organization (e.g. regulatory body, front line organization, research institution);
— Infrastructure and resources (e.g. newly constructed building, refurbished existing building, technical equipment, logistics, administrative support, financing, instructor pool).

For each possible institutional model, indicate a summary of the cost–benefit analysis.]

II.2.2. Coordination and collaboration

[Provide information about the mechanism and frameworks through which national stakeholders would coordinate on development and implementation of the NSSC programmes and activities.]

II.2.3. Conclusion

[Formulate the final proposal for the establishment of an NSSC, indicating the preferred or optimal institutional model based on the needs identified and cost–benefit analysis conducted to compare options. If approved by all stakeholders or national decision makers, propose next steps to implement the proposal.]

Appendix III

EXAMPLE NUCLEAR SECURITY SUPPORT CENTRE INSTITUTIONAL MODELS

Each State will have unique resource constraints, legal and regulatory infrastructure, identified threats and many other factors to consider in developing and sustaining the national nuclear security regime. Likewise, the NSSC concept is not tied to one fixed institutional model, but rather it is a concept that can be customized to the institutional model that is appropriate for the State. States can adopt an NSSC institutional structure tailored to their needs and resource constraints instead of an established rigid, prescriptive structure. Figure 6 shows some of the factors that a State might consider, among others, in determining what institutional model might be appropriate.

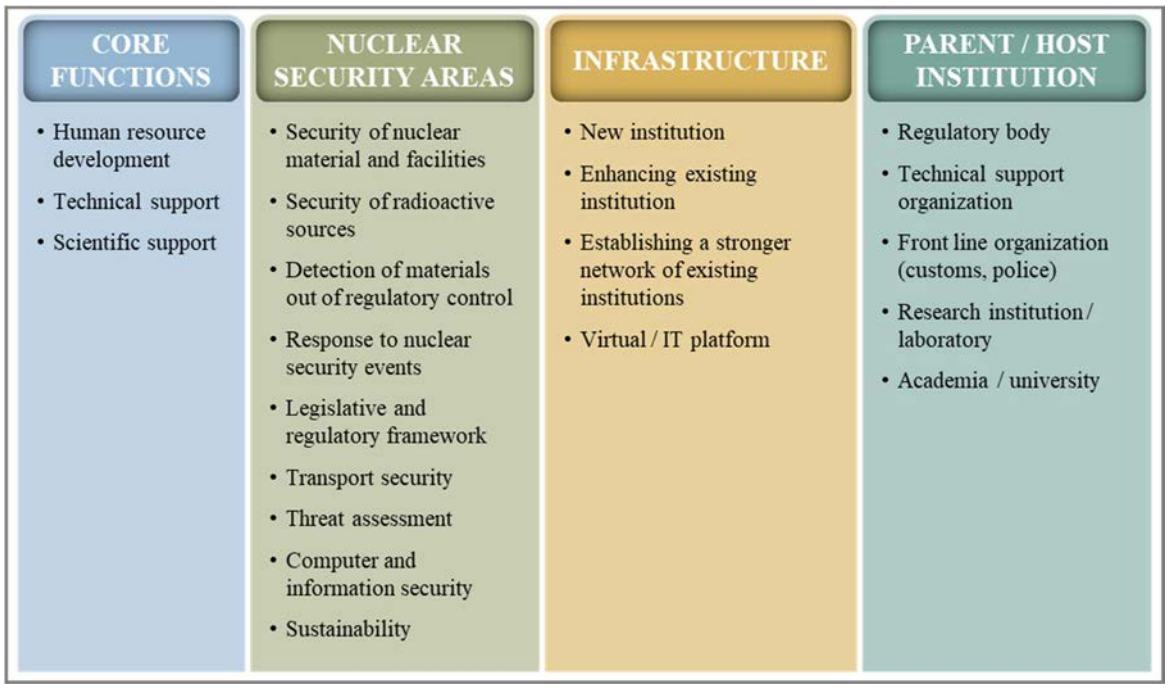

FIG. 6. Example factors in identifying NSSC institutional model.

Regardless of which institutional model the State ultimately chooses, it ideally stems directly from the results of the needs identified in the Resource Assessment and Gap Analysis (see Section 3.3 and Appendix I) and follows a cost–benefit analysis of several possible institutional models that could help meet the State's needs for sustaining the regime.

Figure 7 includes examples that provide a brief overview of possible institutional models for an NSSC, based on various combinations of factors that can be considered during this process. These examples are not exhaustive and are not to be considered as set, prescribed options for States to consider. The parent organization, characteristics, advantages, disadvantages and other features described in these examples are not to be taken as absolute in every similar case. Some States that choose to implement an institutional model similar to one of these examples might face some of the disadvantages described, while others might not.

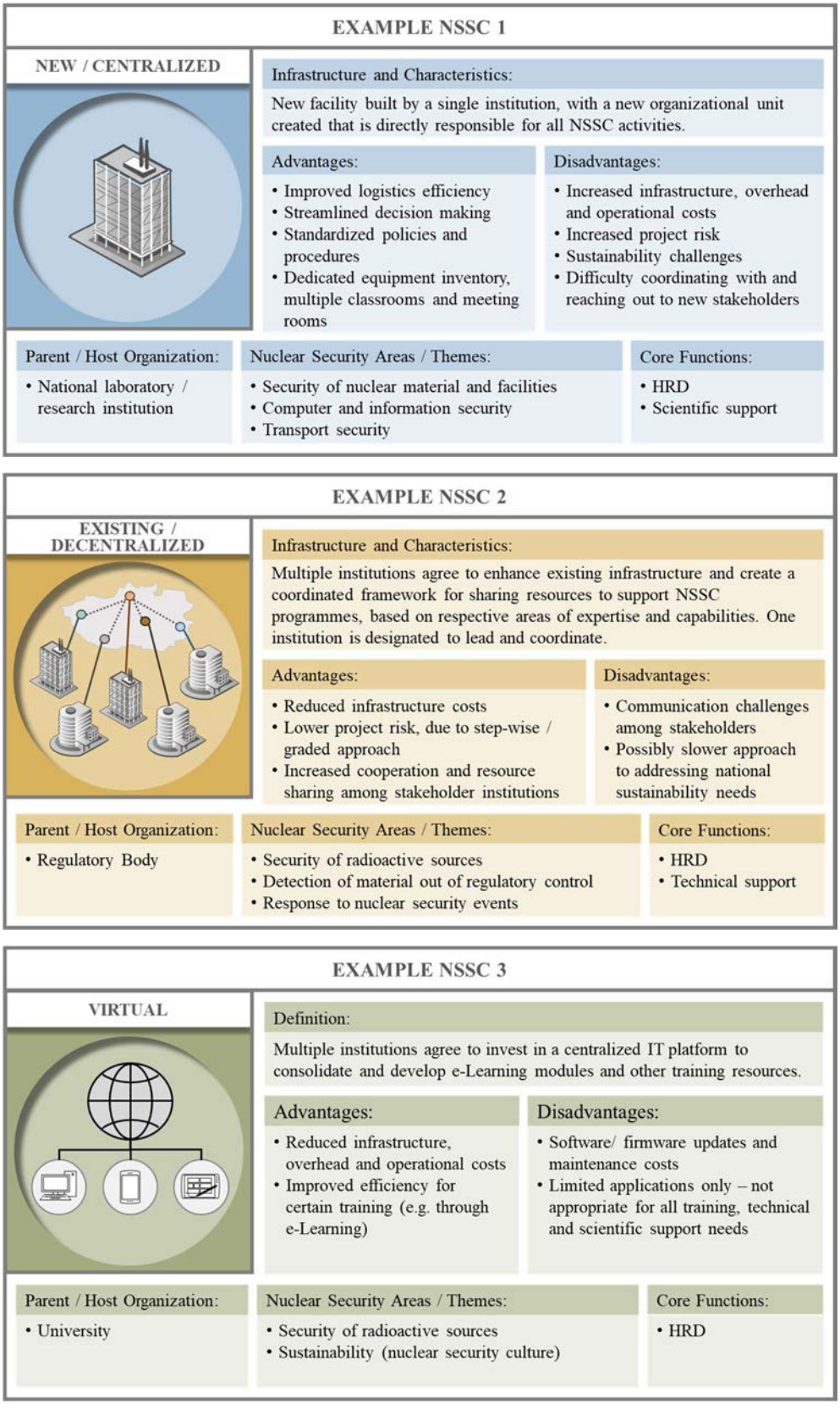

FIG. 7. Example NSSC institutional models.

Appendix IV

STRATEGIC PLANNING

Key stakeholders' objectives are of central importance to organizational strategy. Stakeholder feedback also plays a crucial role in determining whether the products and services delivered by an NSSC meet stakeholders' needs related to effectiveness and efficiency. Ultimately, working through the process of creating a strategy can help an NSSC establish:

— Confirmation of all stakeholders and a clear understanding of their needs;
— Documentation on how each stakeholder will utilize the services of the centre;
— Clearly defined accountabilities and oversight, beginning with the NSSC management or the responsible government administrators;
— Executive management team 'ownership' of the NSSC services and the quality of its performance;
— A process for measuring the effectiveness of the NSSC;
— A process for identifying potential risks and opportunities that the NSSC might encounter, with a plan to mitigate the risks and take advantage of the opportunities.

Understanding external context, factors and changes is an essential starting point for strategy development. There are a number of external events that can heavily influence an NSSC and its strategy, including uncertainties, trigger events, political influence and legislation. External events could have a major influence on an NSSC's strategy, so the strategy will need to be constantly monitored and revised as necessary.

Additionally, organizations may recognize new issues or opportunities during strategy implementation and can update their strategy in response. Exposure to diverse perspectives during strategy development will aid in identification of challenges and potential solutions.

IV.1 STRATEGY MAPPING FOR AN NSSC

A strategy map does not typically map the entire operation of an NSSC but explains the underlying drivers of change. The map provides a framework to capture the strategy against which further planning is developed through projects, targets, initiatives, measures and allocation of resources and responsibilities.

At the top of a strategy map is an NSSC's overall mission, ensuring that the strategy is directed towards that mission. This same mission statement is applied at every level. A number of 'perspectives' are then aligned with this statement along a logical continuum (see Fig. 8).

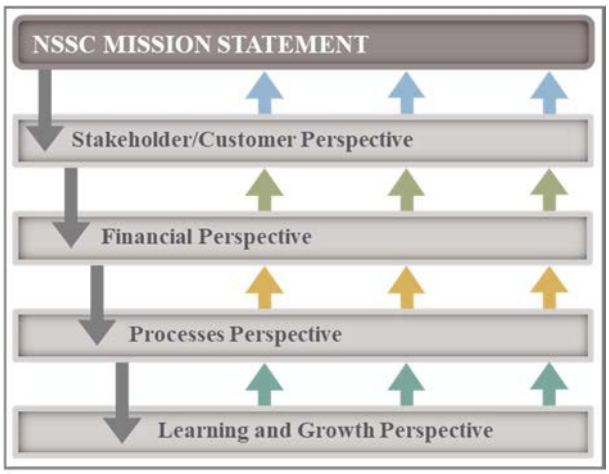

FIG. 8. Strategy map perspectives.

IV.1.1. Stakeholder perspective

The crucial part of any strategy and strategy mapping is defining clearly which stakeholders or customers the NSSC will serve and knowing their expectations. Additionally, it is crucial to define how the NSSC provides value to its stakeholders. The essence of the strategy map is to clearly illustrate how the NSSC will satisfy the needs of the stakeholders or customers within the constraints of the NSSC's budget and other resources.

To validate the strategy, the following questions can be considered for each stakeholder's needs:

1) Will satisfying the stakeholders' needs deliver the revenue or attract the funding the NSSC expects?
2) Can the NSSC actually satisfy the stakeholders' needs in an effective and efficient manner?
3) What does the NSSC have to do to sufficiently address the stakeholders' needs?

IV.1.2 Financial perspective

The financial perspective identifies the financial needs for achieving an NSSC's mission, meeting the needs of its stakeholders and delivering on its programmes. Questions to consider from the financial perspective include:

1) Which stakeholder(s) will be the source of the NSSC's budget or funding?
2) What funding does the NSSC require to be capable of delivering its programmes and remaining sustainable?
3) What financial risks will the NSSC encounter? What steps will it take to mitigate these risks?
4) What financial opportunities might present themselves? What can the NSSC do to take advantage of these opportunities when they arise?

IV.1.3. Processes perspective

The overall approach to documenting the processes perspective is to understand the full scope of the NSSC and logically connect it to where the organization makes its revenue, from whom it receives its budget or funding and where it incurs costs. This perspective will not be successful or sustainable without a clear connection to the financial perspective.

IV.1.4. Learning and growth perspective

Here, the focus is on what the organization needs to learn and how to grow in order to deliver its strategy. NSSCs are advised to be careful to avoid learning and growth objectives that can be overly broad or have little meaning or practical connection to the operation of the centre. Rather, the NSSC defines objectives that are specific, measurable, achievable, relevant and time bound. The focus can be on the skills, knowledge, technology, culture, communication and networks that an NSSC can use to learn and grow as an organization.

After examining each perspective, an NSSC will likely be ready to create a framework strategy map for the organization, such as in the example in Fig. 9. To complete this strategy map, each of the organizations would indicate their strategic objectives concerning their specific perspective.

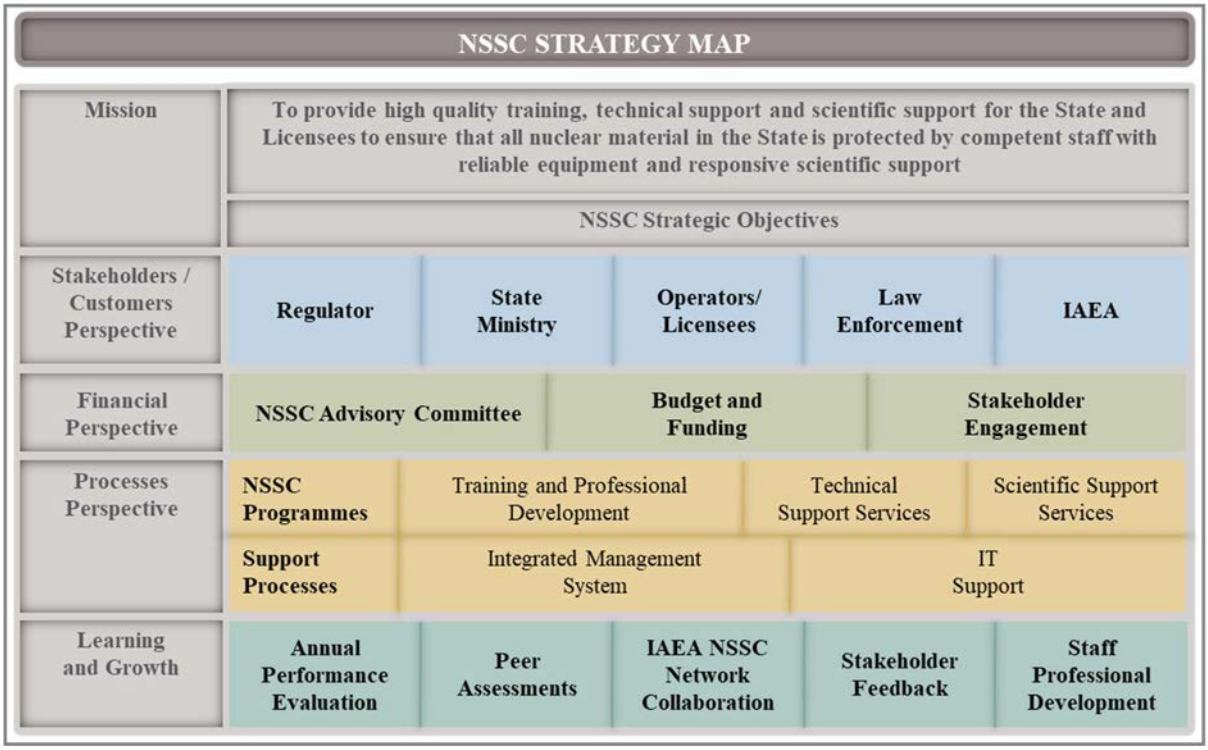

FIG. 9. Example NSSC strategy map.

In conclusion, the process of developing a strategy can help an NSSC understand its objectives and how it will address sustainability.

Appendix V

STRATEGY IMPLEMENTATION PLAN TEMPLATE

A strategy implementation plan consolidates organizational processes and aligns them with the strategy map. The following is a suggested template for an NSSC strategy implementation plan:

V.1. STRATEGY OVERVIEW

[The strategy overview summarizes the results of the strategic planning process outlined in Section 4.2, along with the process for ongoing development and assessment of the strategy.]

V.2. ORGANIZATIONAL STRUCTURE

[An organizational structure defines the functions of an organization and how they are formally arranged or related to each other. In this section, the strategy is mapped to the NSSC organizational structure in detail. A sample organizational structure is provided in Appendix VI.]

V.3. NEEDS ANALYSIS

[Section 3 outlines the process for undertaking a preliminary needs analysis at the national level. The results of this analysis are captured in the business plan and periodically re-examined and updated to reflect new needs identified among national stakeholders.]

V.4. PROGRAMME OBJECTIVES

[Based on the needs analysis, the NSSC's programme objectives are identified.]

V.5. FINANCIAL MANAGEMENT

[One of the most important components for the strategy implementation plan will be a process for financial management, to include the following information:

— Budget planning;
— Clearly defined financial reporting structures;
— Appropriate cost accounting and controlling methods used to ensure that projects and activities finish within budget and on schedule;
— Management of income and expenditures;
— Delegation of authority for signing contracts and initiating orders, approving invoices, authorizing payments and signing bank transfers.]

V.6. PROJECT MANAGEMENT

[Section 4.4 provides practical guidance on utilizing project management to develop the NSSC as a national project. The strategy implementation plan identifies expected project milestones within the organization, including timeframes and measurable and verifiable objectives. Section 5.3.1 provides practical guidance on implementation of integrated management systems.]

V.7. COOPERATION AND COLLABORATION

[The NSSC can document policies for how it interfaces and collaborates with any partners.]

V.8. COMMUNICATION PLAN

[All staff members of an NSSC are integrated into a communication plan. The communication plan is referenced in the strategy implementation plan along with a process for regular review and assessment (such as during an employee satisfaction survey). The communication plan provides a matrix or structure of regularly scheduled meetings and a plan for documenting attendees, topics, frequency and recording meeting actions.]

V.9. RESOURCE MANAGEMENT

[The NSSC can document its infrastructure procedures, maintenance instructions and records (if applicable). Key questions to consider include:

— Has the centre identified all of the resources that are crucial for its services?
— If applicable, are maintenance intervals for resources defined? Are they met regularly?
— Are contingency plans in place to mitigate the risk of an emergency (such as IT system breakdowns, interruptions in staffing levels) that could have a major effect on our services and outcomes?]

V.10. COMPETENCE MANAGEMENT

[Competence is the ability of staff to apply knowledge and skills to achieve intended results. Competencies can be aligned with the NSSC's strategy implementation plan and stakeholder needs. Staff members are expected to maintain their qualifications and improve their competencies continuously. These expectations can be supported by individual development plans that enable staff to increase their knowledge, skills and experience in all necessary areas.

The strategy implementation plan documents the process for identifying and evaluating competencies (i.e. conducting training appraisal interviews, comparison of competencies required by the State and actual competencies, self-assessments, performance assessments). The following are examples of questions that can support the development of appropriate processes:

— Are the individual targets of personnel based on the organizational strategy?
— Are all job profiles up to date? Do they contain relevant competencies?
— Is a clearly defined approach in place to regularly maintain job profiles?
— Does the NSSC provide appropriate training for staff members?
— Are records available that demonstrate the impact of staff member development activities?
— Are staff performance evaluation methods consistent with relevant legislation? Are they reviewed regularly?
— Are job profiles, including necessary competencies, used in evaluations?
— Are competencies for associates (e.g. external consultants, trainers) defined? Do existing consultants fulfil them?
— Are clearly defined criteria used to evaluate associates? In the latest evaluation, did records show that associates were competent?
— Does the NSSC regularly review its staff performance evaluation methods?]

V.11. RISK MANAGEMENT

[Perhaps the most important component of the strategy implementation plan is the assessment of organizational risk. How will the NSSC prevent risks from materializing? How will the NSSC assist in mitigating the consequences of an event if it does occur? Broad questions to consider while undertaking a risk assessment include the following:

— Is the risk identification process closely connected to strategy development?
— Are strategic risks broken down into process risks or programmatic risks?

— Does the organization use a risk assessment methodology to identify risk?
— Does the organization use a risk management process to mitigate risk?
— Are personnel who share their concerns about suspicious or fraudulent activities protected from negative repercussions? Can they report their concerns to an independent department?
— Is a code of conduct in place for all staff?]

Appendix VI

EXAMPLE NUCLEAR SECURITY SUPPORT CENTRE ORGANIZATIONAL STRUCTURE

In a centralized institutional model, the NSSC organization structure could be similar to the structure represented in Fig. 10. In this figure, there is a clear hierarchical approach where divisions are based on the core functions of the NSSC and administrative services. In a decentralized institutional model, the State documents the roles, expertise and capabilities of each NSSC stakeholder organization in a matrix.

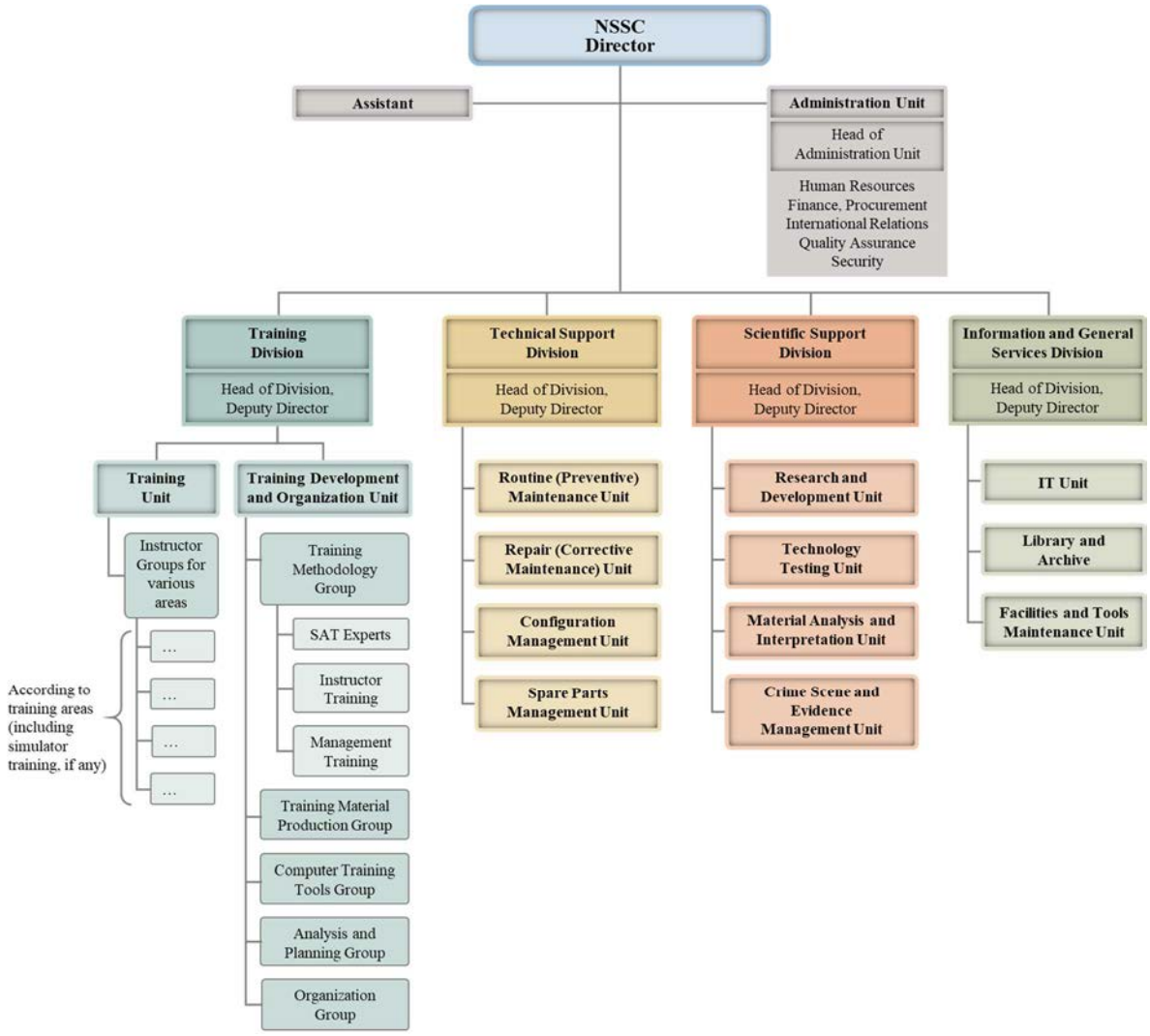

FIG. 10. Example centralized NSSC organizational structure.

Appendix VII

GOOD PRACTICES IN APPLYING A SYSTEMATIC APPROACH TO TRAINING

Applying an SAT helps organizations to produce quality training. The key characteristics expected of quality training include that the training is timely, technically accurate, relevant to the trainee's job, and instructionally effective and challenging. Training is also expected to improve job incumbent and organizational performance, preserve and transfer knowledge to new generations, adequately contribute to safety and security, and promote safety and security culture.

An SAT is a management tool to establish quality management for training and qualification. An SAT provides a logical progression from the identification of the knowledge, skills and attitudes needed to perform a job to the development and implementation of training to achieve these competencies and subsequent evaluation of this training.

An SAT has five interrelated phases: analysis, design, development, implementation and evaluation. How these five phases are interrelated is identified in Fig. 11.

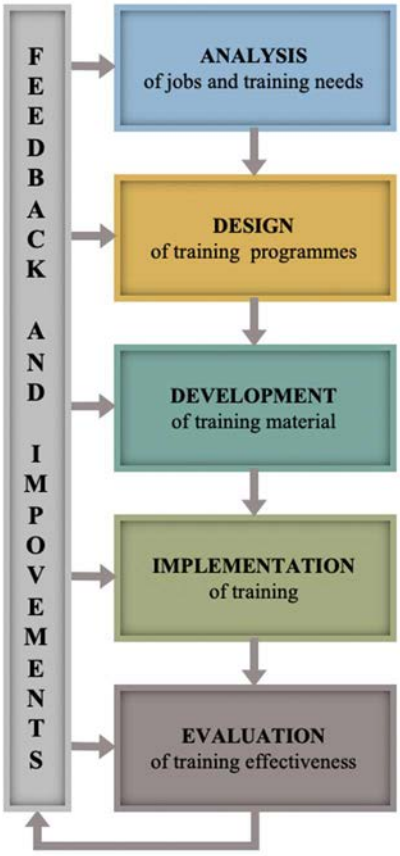

FIG. 11. Phases of an SAT.

Figure 12 provides an overview of an SAT process for nuclear security training. The success of an SAT relies on involving key participants, including:

— Organization or institution for which personnel SAT-based training is developed (e.g. a competent authority or operating organization);
— Senior and line managers;
— Trainees;
— Instructors;
— Subject matter experts;

— Regulatory bodies;
— National training and technical support organizations;
— National or organizational SAT project team;
— External SAT consultants to the national training programmes.

Development of national SAT-based training programmes using SAT includes participation by job incumbents and subject matter experts, instructors, the organization's managers and an SAT or instructional specialist.

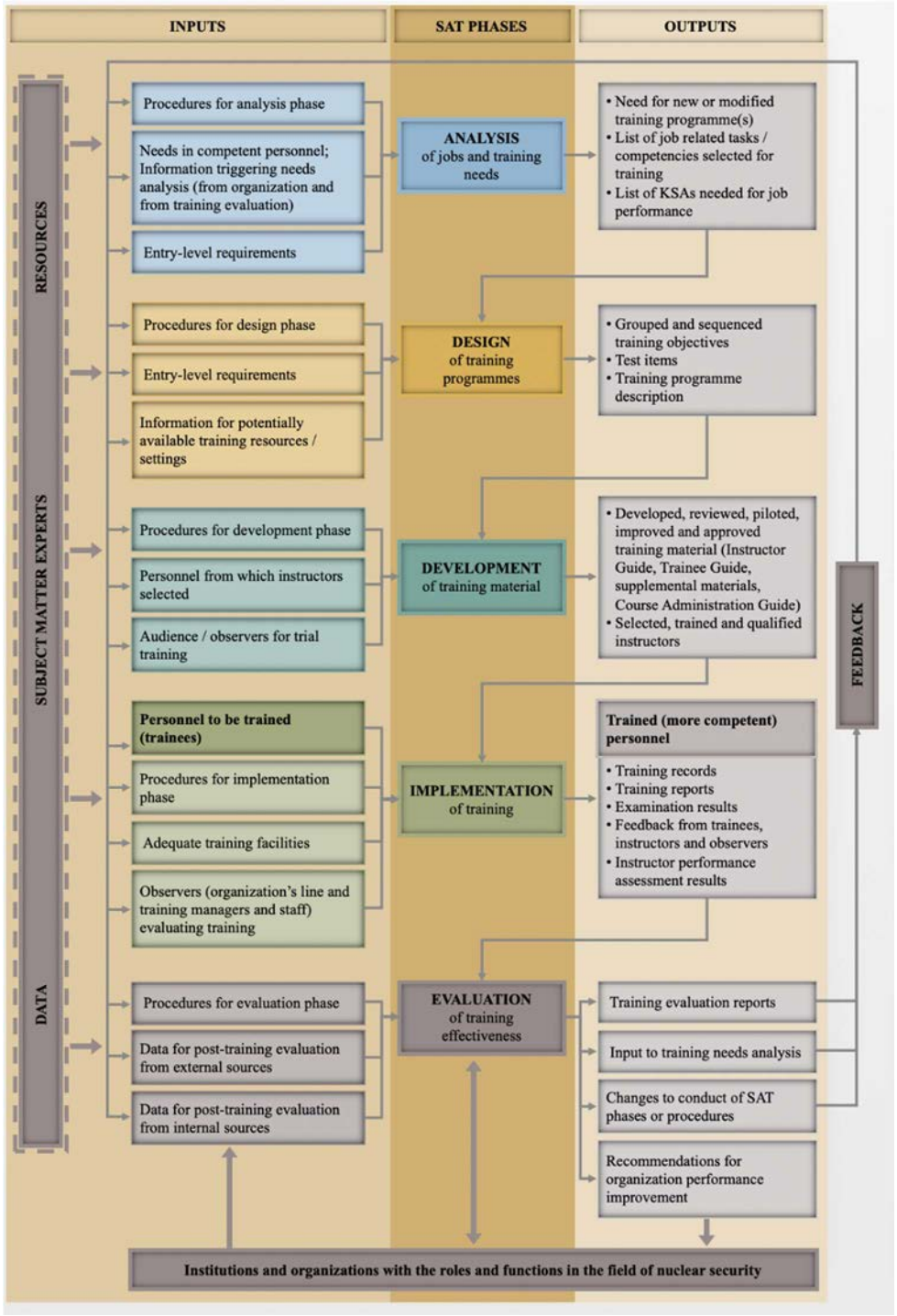

FIG. 12. Overview of the SAT process.

There are various training settings and training methods. Training settings include classroom, simulator, on-the-job, self-study, laboratory, workshop and mock-up training. Training methods include lecture, observation, practice, walk-through, drill, discussion, oral questioning, role-playing, e-learning, self-study and fulfilment of projects.

VII.1. KEY PREREQUISITES FOR SUCCESSFUL INTRODUCTION OF AN SAT

The main prerequisite for successful introduction of an SAT is managers' commitment to and recognition of the need for establishing a personnel training system; allocation of necessary resources; and personal participation in training including identification of training needs and evaluation of training. Expectations for quality and effective training are established from the beginning of creating a training system and developing SAT-based training programmes. Objectives and criteria to evaluate quality and effectiveness of training are established and formalized. Training procedures for each of the SAT phases can include detailed steps to be taken in that phase and the responsibilities of personnel performing the work. Understanding the basics of an SAT can be included as a subject in a management training programme.

Promoting an SAT within a State can be accomplished via various stakeholders. A State's regulatory body can implement regulations requiring the use of an SAT which licence holders and operating organizations will apply. Availability of competent subject matter experts is one of the crucial factors for the success of an SAT, especially for its analysis and development phases. A project team can be created for the development of SAT-based training programmes. An SAT can also be promoted by providing training on SAT methodology, visiting other training organizations to learn how an SAT is applied and through coaching by external SAT experts.

A strategy for the development and implementation of an SAT -based training system is identified, documented and approved by senior managers. This strategy can be developed using a graded approach to SAT application considering the number of trainees to be trained and the potential impact of jobs and tasks associated with both safety and security as well as the psychomotor and high-level cognitive nature of these tasks and the technical and non-technical competencies needed to complete these tasks. At an early stage, an organization can consider using materials from similar SAT projects and programmes.

Appendix VIII

TEMPLATES FOR INITIAL OVERALL HUMAN RESOURCES AND TRAINING NEEDS ANALYSIS

The following templates provide a basis for conducting a human resource and training needs analysis based on organizational roles and responsibilities as well as job functions in nuclear security. Once these forms are completed, human resource and training needs can be identified and prioritized. Based on this information, a strategy can be developed to realistically meet the State' s human resources needs for personnel with nuclear security functions. The strategy can include both medium and long term goals and can include the development of training courses or training programmes as well as planning for succession, recruitment and outsourcing. Once the strategy is developed, projects to implement the strategy can be initiated. A process for reviewing and updating the needs analysis can also be established. Continuous improvement is essential for ensuring the sustainability of human resources and training.

VIII.1. FORM 1. ORGANIZATIONS WITH NUCLEAR SECURITY ROLES AND RESPONSIBILITIES

Complete the form for all organizations with nuclear security roles and responsibilities at the national level. States may need to replicate this form and add rows, as necessary, to capture all relevant organizations.

National Level Organizations with Nuclear Security Responsibilities		
Organization	**Main Purpose of Organization**	**Nuclear Security Roles and Responsibilities**

VIII.2. FORM 2. JOBS WITH NUCLEAR SECURITY FUNCTIONS

Complete Form 2 for all jobs with nuclear security functions in each organization that completed Form 1.

Organization: _____

Organizational unit (if appropriate): _____

Job with functions in nuclear security	Number of existing staff	Expected number of staff in 5 years	Functions in nuclear security	Main qualification requirements set out by the State for the function or tasks in nuclear security			
				Education	Training (including initial training and continuing training / requalification)	Experience	Special requirements defined by the State (including licence, authorization or certificate

VIII.3. FORM 3. EDUCATIONAL AND TRAINING RESOURCES FOR JOBS WITH NUCLEAR SECURITY FUNCTIONS

Complete the form for each job included in Form 2, describing all the functions of this job in nuclear security.

Job with functions in nuclear security: _____								
Major functions of the job in nuclear security	Existing competency gaps	Expected future competency needs	Available education programmes			Available training programmes		
			Title(s)	Provider(s)	Gaps in education programme, method to address gap, and priority	Title(s)	Provider(s)	Gaps in training programme, method to address gap, and priority

VIII.4. FORM 4. TRAINING DEMANDS FOR INDIVIDUAL JOBS

Complete the form for all jobs with nuclear security functions for organizations that completed Form 1.

Organization (and its organizational unit, if appropriate):_____			
Job with functions in nuclear security	Average number of new staff to be trained annually (e.g. during next 5 years)	Continuing training demands (per cycle and person-hours / year)	Brief description of training needed (e.g. raising awareness, basics or fundamentals, job- or task-specific, joint interagency training, on-site, off-site, centralized training centre / NSSC, in the organization' s training department, in the country or abroad)

VIII.5. FORM 5. TRAINING DEMANDS FOR INTERAGENCY NUCLEAR SECURITY TRAINING

Complete the form for interagency training required by the State in the area of nuclear security.

Types (titles) of the interagency (including multilateral) training needed (including tabletop and field exercises)	Organizations and personnel needing training	Approximate number of personnel to be trained (in total, or preferably in each organization)	Available training and provider(s)	Main gaps in training, method to address gaps, and priority

Appendix IX

TRAINING MANAGEMENT PLAN TEMPLATE

IX.1. TRAINING MANAGEMENT

[Document information regarding how training is managed. This information can be documented and supported by a systematic approach to training. Document that the management processes are in place to support a nuclear security performance-based training programme that strengthens and sustains nuclear security responsibilities.]

IX.1.1. Training management and personnel roles and responsibilities

[Identify all training programme personnel titles and their appropriate roles and responsibilities specific to the development, implementation, maintenance and sustainability of the organization's training programme.]

IX.1.2. Training organizational chart

[Include an organizational chart to show the line of supervision or reporting structure for all individuals in the training organization.]

IX.1.3. Training needs analysis

[Identify the steps of a training needs analysis process and capture the results from the training needs analysis.]

IX.1.4. Annual training management plan review

[Capture lessons learned from the current training programme to ensure quality, maintenance and sustainability. Identify the levels or types of evaluation that provide input into the evaluation process and its final outputs.]

IX.2. INSTRUCTOR QUALIFICATIONS AND DEVELOPMENT

[Document NSSC instructor staff information. If not included in the training management organizational chart, this section may include specific instructor names with areas of responsibilities and background or experience for their instructional capability.]

IX.2.1. Instructor qualifications

[Document instructor types and roles. Document the subject matter expert training requirements or criteria set by the State for an instructor of special trainings. Identify any specific instructor prerequisites, assignments, rotations and evaluation processes for any instructor.]

IX.2.2. Instructor development

[Detail NSSC policy for ongoing instructor training and development. Document any specific instructor training prerequisites, requirements set by the State and qualification processes, including for continuing education or professional development opportunities.]

IX.2.3. Instructor performance assessment

[Document performance assessment processes.]

IX.3. TRAINING SUPPORT

[Document administrative support, training facilities, equipment and materials necessary to adequately support all training activities.]

IX.3.1. Training administration

[Document training administrative support functions or processes for training management and instructor staff to include scheduling, material production, interpretation. Document the annual training event calendar of the curriculum or courses. Document the training schedule development process to include steps for approvals, instructor identification and implementation. Document who is responsible for maintaining the training schedule and how often it is updated and published.]

IX.3.2. Training facilities, equipment and materials

[Document owners, location, and specifications (size, limitations, layouts) of all training sites (classroom and field). List equipment inventories for specific training sites to include any special usage requirements defined by the State. This can be organized according to the curriculum materials it supports and procedures for usage.]

IX.3.3. Training records

[Document the owner and location of all training records. Note any special processes enforced for maintaining these records. Document the system and processes used to invite participants to training courses, scheduling training, recording training assessments and recording training attendance.]

IX.4. SYSTEMATIC APPROACH TO TRAINING

[Document how the systematic approach to training is implemented within the organization (see Fig. 12). List processes and tools as well as inputs and outputs for each SAT phase. Identify who is responsible during each phase and the approval process necessary to proceed to the next phase.]

IX.4.1 Analysis phase

[Document the analysis phase plan and process for analysing training needs. Document how information is gathered and list the outputs for the phase.]

IX.4.2. Design phase

[Document the course design phase steps and how the information from the analysis is used as an input for this process. Document the outputs for this phase.]

IX.4.3. Development phase

[Document the course material development schedule and those responsible for approving content. Document how the input from design is used as an input for this process. Document the outputs for this phase. Document the material review and revision process.]

IX.4.4. Implementation phase

[Document the course implementation plan and training delivery schedule. Identify how the input from the development phase is used in this process. Document the outputs for this phase. Document those responsible for administration duties. Identify the course evaluation plan, course delivery tools and feedback documentation processes.]

IX.4.5. Evaluation phase

[Document evaluation plans and processes in the context of determining the effectiveness of the training system or an individual training course. Document evaluation reporting and documentation processes or procedures. Document how the input from the other phases are used in the evaluation phase. Document the outputs for this phase.]

Appendix X

TECHNICAL SUPPORT PLAN TEMPLATE

X.1 INTRODUCTION

X.1.1. Purpose

[Describe the purpose of the Technical Support Plan. The Technical Support Plan documents the operating organization's approach for the coordination, control, planning, execution and monitoring of all technical support related activities. As an example, the NSSC technical support programme may be designed to support equipment life cycle management for stakeholders of the nuclear security regime. The purpose of the Technical Support Plan is to ensure everyone involved in the maintenance and ongoing operation of nuclear security equipment understands the functionality and maintenance requirements that the State has defined, with a view to supporting long term performance-based equipment design criteria.]

X.1.2. Site location

[Provide a general description of the facility and its location, including a map of the state with the location highlighted.]

X.1.3. Site layout and equipment locations

[Document the location of all critical equipment, spare parts storage and other items at the site including building and room numbers, as applicable. When available, include basic engineering drawings or maps that identify these locations.]

X.1.4. Maintenance organization roles and responsibilities

[Document the roles and responsibilities of organizations that support maintenance efforts at all facilities or sites.]

X.2. MAINTENANCE SCOPE AND TASK SELECTION

[In this section, document the pieces of equipment to be formally maintained, list the maintenance tasks necessary to maintain this equipment and document which organizations perform those tasks. Both routine and corrective maintenance can be utilized to provide a high degree of confidence that equipment degradation is identified and corrected, that the life of the equipment is optimized and that the maintenance programme is cost effective.]

X.2.1. Nuclear security system critical assets

[Document equipment components critical to the success of the nuclear security systems mission.]

X.2.2. Nuclear security system functional hierarchy

[Develop a functional hierarchy that reflects the instrumentation and equipment of your installed system. A functional hierarchy is an organizing tool for all maintenance activities, reporting and documentation. The functional hierarchy categorizes the maintenance tasks to assist the maintenance supervisor in developing the maintenance scope needed for each equipment location. The equipment categories selected reflect example maintenance management activity areas.]

X.2.3. Nuclear security system maintenance task lists

[Document routine and corrective maintenance tasks.]

X.2.4. Maintenance scope configuration items

[Document maintenance scope configuration items to be controlled. This list of items can be reviewed annually.]

X.2.5. Maintenance scope budget items

[Document maintenance scope and task selection budget items.]

X.2.6. Maintenance scope continuous improvement

[Document maintenance scope and task selection continuous improvement items such as periodic assessments and KPIs.]

X.3. MAINTENANCE PROVIDER MANAGEMENT

[The management of maintenance providers consists of a methodical maintenance provider selection process, maintenance task oversight with a comprehensive maintenance reporting system and a maintenance provider task performance tracking process.]

X.3.1. Maintenance provider selection

[Document the requisite skills and experience necessary to effectively maintain the various nuclear security system, subsystems and critical assets.]

X.3.2. Maintenance activity management

[Document any maintenance provider contracting mechanisms, communications protocols, and work quality assurance standards.]

X.3.3. Documentation and reporting protocols

[Document the maintenance task completion process including reporting protocols and formats.]

X.3.4. Maintenance provider management configuration items

[Document maintenance provider management configuration items to be controlled and reviewed annually.]

X.3.5. Maintenance provider management budget items

[Document maintenance provider management budget items to include routine maintenance costs, estimated corrective maintenance costs and planned system upgrade costs.]

X.3.6. Maintenance provider management continuous improvement

[Document maintenance provider management continuous improvement processes such as periodic assessments and KPIs.]

X.4. SPARE PARTS MANAGEMENT

[To begin the spare parts management process, the parts needed to maintain critical assets are identified and inventory levels defined. Procurement processes are identified in order to anticipate costs and estimate delivery and installation timelines for replacement parts. Spare parts inventories and usage are documented and reviewed on a regular basis to ensure proper inventory levels are defined and met. Spare parts management includes review processes for continuous improvement.]

X.4.1. Spare parts inventory levels

[Document spare parts inventory levels to be managed and monitored by the NSSC.]

X.4.2. Spare parts sourcing assessment

[Perform and document an initial spare parts sourcing assessment including vendors, pricing, lead times and shipping costs. This assessment can be reviewed and updated as needed.]

X.4.3. Spare parts inventory management

[Document spare parts inventory management practices including storage locations, access controls and physical inventory protocols.]

X.4.4. Spare parts procurement

[Document spare parts procurement processes and procedures.]

X.4.5. Spare parts management configuration items

[At a minimum, document spare parts management configuration items to be controlled and reviewed annually.]

X.4.6. Spare parts management budget items

[Document maintenance provider management budget items.]

X.4.7. Spare parts management continuous improvement

[Document spare parts management continuous improvement items such as periodic assessments and KPIs.]

X.5. RADIOACTIVE CHECK SOURCE MANAGEMENT

[Installation, training, operations and maintenance activities associated with nuclear security systems can include the use of radiation sources of specific isotopes and activities. These radioactive check sources are utilized to complete activities such as equipment installation and formal system acceptance testing, equipment calibration and testing, equipment maintenance and repair activities, and training activities for operators and maintenance providers. The storage, handling, transport and disposal of radioactive check sources are typically subject to national regulations.]

X.5.1. Radioactive check source needs

[Document radioactive check sources needed to support the nuclear security system including specific isotopes and activity ranges.]

X.5.2. Radioactive check source procurement

[Document radioactive check source procurement and use requirements set out and approved by the State, including, licensing requirements, available vendors, shipping, replacement schedule, storage, access controls, inspection and inventory protocols, and disposal procedures.]

X.5.3. Radioactive check source management configuration items

[Document radioactive check source management configuration items to be controlled. At a minimum, implement a configuration items review process annually).

X.5.4. Radioactive check source management budget items

[Document radioactive check source management budget items.]

X.5.5. Radioactive check source management continuous improvement

[Document radioactive check source management continuous improvement items such as periodic assessments and KPIs.]

X.6. CONFIGURATION MANAGEMENT

[A disciplined configuration management programme identifies and implements processes and procedures to document, review and control the physical, functional and operational characteristics of the installed nuclear security system. The benefits of a strong configuration management system include an historical knowledge of the system's function and development (configuration baseline), a change control process, and a periodic configuration item verification and accountability assessment. Organizations can anticipate and document plans to make technological improvements and changes to the nuclear security system and its components. To meet system mission needs, ensure consistency and function, and anticipate the overall impact to the entire system, these changes are proposed, evaluated and implemented in accordance with approved processes and procedures.]

X.6.1. Configuration item baseline

[Develop and document a system configuration item baseline.]

X.6.2. Configuration item change control

[In order to maintain consistency between design specifications and the system's physical configuration, a formal change control process can be developed, documented and implemented.]

X.6.3. Configuration audits

[Develop and document a configuration audit process.]

X.6.4. Configuration item summary

[Develop and document a list of configuration items from each maintenance core capability section of this document. This will constitute the bulk of your configuration item baseline.]

X.6.5. Configuration management budget items

[Document configuration management budget items.]

X.6.6. Configuration management continuous improvement

[Document configuration management continuous improvement items such as periodic assessments and KPIs.]

X.7. MAINTENANCE BUDGET

[Document a list of the budget items from each maintenance core capability. This will constitute the bulk of your annual maintenance budget request and out-year planning assumptions.]

X.7.1. Maintenance budget configuration items

[Document maintenance budget configuration items.]

X.7.2. Maintenance budget continuous improvement

[Document maintenance budget continuous improvement items such as periodic assessments and KPIs.]

X.8. CONTINUOUS IMPROVEMENT

[Routine self-assessments and measurement of KPIs are critical to monitoring the health of the maintenance organization as well as to the health and functionality of the installed system. This information is used to identify and implement specific changes that improve system performance and maintenance processes or reduce costs. Using this information to develop metrics, then trending these metrics over time, can indicate the success that has been achieved as well as highlight potential problem areas and irregularities. Utilizing metrics in this way will drive the desired behaviours and identify areas for improvement.

X.8.1. Site self-assessment summary

[Document all continuous improvement items from each maintenance core capability section of this document.]

X.8.2. Self-assessment programme findings management

[Develop, document, and implement an issues management process.]

X.8.3. Continuous improvement programme configuration items

[Document continuous improvement programme configuration items.]

X.8.4. Continuous improvement programme budget items

[Document continuous improvement programme budget items.]

X.8.5. Continuous improvement programme continuous improvement

[Document periodic assessments and KPIs specific to the continuous improvement programme.]

Appendix XI

TECHNICAL BASES FOR NUCLEAR SECURITY SUPPORT CENTRE SELF-ASSESSMENT AND TECHNICAL EXCHANGE

XI.1. INTRODUCTION

The technical bases provided in this appendix can support an NSSC in conducting a self-assessment or conducting a technical exchange with another centre, based on the contents of this publication. Below is a list of other parts of this publication that, if completed, could support the conduct of a self-assessment or technical exchange.

— Stakeholder Resource Assessment and Gap Analysis (Appendix I Stakeholder Resource Assessment and Gap Analysis Worksheet)
— NSSC Feasibility Report (see Appendix II Feasibility Report Template)
— NSSC's strategic or long term plans (see Appendix V Strategy Implementation Plan Template)
— HRD and training programme strategic plans and supporting documentation (see Appendix IX Training Management Plan Template)
— Technical support strategic plans and supporting documentation (see Appendix X Technical Support Plan Template)
— Scientific support strategic plans and supporting documentation (see Table 1)

The NSSC can prepare a report following the self-assessment or technical exchange to capture key findings, best practices and lessons learned, which could be shared with NSSC Network, excluding sensitive information as necessary.

XI.2. TECHNICAL BASIS: FEASIBILITY DETERMINATION PHASE

FD1 The State has clearly identified and defined nuclear security responsibilities of competent authorities designated by the State, including regulatory bodies and those competent authorities related to border control and law enforcement. Roles and responsibilities for all authorized persons and organizations are clearly identified and defined and have been codified through the national legislative and regulatory framework.

FD2 The State has established a national nuclear security coordinating body or mechanism to ensure optimal cooperation among all organizations with nuclear security responsibilities.

FD3 The State has undertaken an analysis of its ability to sustain the effectiveness of its nuclear security regime over time, to include all aspects of the national nuclear security regime, with a particular view toward discussing any possible gaps in HRD, technical support and scientific support capabilities needed to sustain the regime.

FD4 The national nuclear security coordinating body or mechanism has been used to facilitate consultations and meetings to support an NSSC feasibility determination.

FD5 The State has an Integrated Nuclear Security Support Plan (INSSP) in place or is developing one and the INSSP process has been used to facilitate a coordinated approach among potential stakeholders in support of an NSSC feasibility determination.

FD6 The State has completed the Nuclear Security Information Management System (NUSIMS) questionnaire and this information has been utilized to conduct a high-level self-assessment of its national nuclear security regime.

FD7 The State has clearly identified potential stakeholders of the NSSC.

FD8 The State has designated one institution to lead an NSSC feasibility determination process within the national coordinating body or mechanism and the lead institution serves as the disseminator and collector of necessary information to and from each organization, helps organize meetings and consultations, and documents any results and decisions.

FD9 The State has analysed the potential role of external stakeholders (i.e. vendors and suppliers, public and civil society, other States, the IAEA and other international organizations) who work with or report to the national nuclear security coordinating body or mechanism.

FD10 Each identified stakeholder has conducted a structured and detailed assessment of its nuclear security resources and gaps in the areas of training, technical support and scientific support according to each organization's agreed to roles and responsibilities in the national nuclear security regime.

FD11 The designated lead organization has collated and analysed the data from the completed resource assessments to forecast needs, identify gaps and provide a preliminary indication of how the needs and gaps will be addressed by the NSSC in a draft Feasibility Report.

FD12 The State has evaluated and considered several possible institutional models customized to meet the needs and available resources described in the draft feasibility report.

FD13 The State has undertaken a cost–benefit analysis of a limited number of candidate institutional models to ensure that State needs identified in the draft NSSC feasibility report will be optimally addressed.

FD14 The State has completed the systematic determination of the need and feasibility for establishing an NSSC and documented a recommendation in the final NSSC Feasibility Report.

FD15 The NSSC Feasibility Report has been presented to the national nuclear security coordinating body or mechanism for final review and the State has reached a decision to launch a national project to establish an NSSC.

FD16 Senior decision makers in the State have demonstrated their commitment to, involvement with, and sense of ownership in the establishment and operation of the centre.

XI.3. TECHNICAL BASIS: PLANNING PHASE

PP1 The State has continued to use the nuclear security coordination body or has established a new NSSC coordination council or committee to coordinate planning for establishing and operating the NSSC.

PP2 The State has established a formal agreement among the NSSC stakeholders that outlines stakeholders' roles and responsibilities, identifies the NSSC host or parent organization, documents the agreed to scope of NSSC programmes and activities, and outlines key administrative arrangements.

PP3 The NSSC has developed a strategy that is informed by the NSSC mission, the role that the NSSC will serve in the national nuclear security regime and the organization's values.

PP4 The NSSC has developed a strategy implementation plan that provides a clear organizational structure based on the NSSC's programmes and processes, supported by key performance indicators and focused on long term sustainability.

PP5 The State views planning the establishment of an NSSC as a national project and has implemented common project management practices including risk management, project control and stakeholder management.

XI.4. TECHNICAL BASIS: ESTABLISHING AND OPERATING PHASE

EO1 The State has applied a systematic approach to developing NSSC programmes in HRD, technical support and scientific support. ***NOTE****: Programme-specific assessments to be conducted utilizing the remaining sections of this appendix, as appropriate.*

EO2 The State has applied a systematic approach to determining laboratory development and equipment procurement, considering the sustainable use and maintenance of facilities and equipment for the lifetime of the NSSC.

EO3 Operational and performance specifications for the laboratory and equipment have been detailed in the relevant planning documents for the NSSC.

EO4 The NSSC works proactively to obtain feedback in various ways from all stakeholders on the effectiveness of the centre's programmes and to measure whether the services the NSSC has provided have led to the desired outcomes in sustaining the national regime.

EO5 The NSSC has implemented an IMS focused on continuous improvement and sustainability of the nuclear security regime.

EO6 The NSSC has adopted a strategy development planning and implementation cycle focused on continuous improvement in the sustainability, adequacy and effectiveness of the management system.

EO7 The NSSC conducts periodic self-assessments and has a documented process for how the results will be used to drive NSSC performance improvement.

XI.5. TECHNICAL BASIS: HUMAN RESOURCE DEVELOPMENT PROGRAMME

HRD1 The HRD programme is designed and developed to meet national training needs, based on an analysis of the workers with nuclear security responsibilities employed throughout the various organizations within the State.

HRD2 The State has utilized an SAT to develop the competence of individuals for current and future roles within the nuclear security regime by using job tasks and competencies as the basis for training.

HRD3 NSSC training is specific in nature and tailored to meet specific needs (e.g. solving a performance problem, using new or unfamiliar equipment, complying with a regulatory mandate).

HRD4 The NSSC shares curriculum and training methods among competent authorities to prevent and reduce unnecessary duplication of effort.

HRD5 The NSSC has established training programmes with an organizational structure that includes clearly defined roles and responsibilities for all organizations and persons involved and a training management plan that documents the programme's processes and procedures.

HRD6 The NSSC has established an instructor training, qualifications and development programme.

HRD7 The NSSC has established and manages training administration including training facilities, equipment, materials and training records.

XI.6. TECHNICAL BASIS: TECHNICAL SUPPORT PROGRAMME

TS1 The State conducted a thorough technical support needs assessment including an inventory of all equipment owned and operated by the various NSSC stakeholders and identified criteria to determine which equipment can be managed with technical support from the NSSC.

TS2 The NSSC has developed a technical support plan for equipment life cycle management, including equipment selection; maintenance tasks such as calibration, software support, and repairs; and equipment upgrades.

TS3 If the technical support programme includes the selection and management of an external equipment maintenance provider, then the technical support plan also includes information on maintenance provider selection, maintenance activity management, documentation and reporting protocols, routine and corrective maintenance schedules, systems upgrade schedules and continuous improvement.

TS4 The Technical Support Plan details the management of spare parts including sourcing, inventory levelling and management, procurement processes, configuration, budget and continuous improvement.

TS5 The technical support plan documents the needs for radioactive check sources to support the nuclear security system including specific isotopes and activity ranges as well as appropriate associated management processes and procedures.

TS6 The technical support plan identifies and implements a configuration management programme to include an historical knowledge of the system's function and development (configuration baseline), a change control process and a periodic configuration item verification and accountability assessment.

TS7 The technical support plan includes a baseline of budget items from each core capability and is utilized to determine the annual maintenance budget and define future planning assumptions.

TS8 The NSSC provides a maintenance training programme to improve system availability and maintenance provider skills as well as decrease maintenance costs by reducing manufacturer support needs.

XI.7. TECHNICAL BASIS: SCIENTIFIC SUPPORT PROGRAMME

SS1 Stakeholders have reached agreement on the roles and responsibilities of the NSSC with regard to scientific support (SS) functions.

SS2 The NSSC scientific support planning process followed, as much as is practicable, a systematic approach to identifying scientific support needs and gaps within the State and documented the areas of scientific support to be provided and related tasks.

SS3 The State's NSSC scientific support programme services for provision of expert advice to competent authorities or analytical support in response to a nuclear security event are formally documented in the State's official policies, procedures and guidelines (i.e. nuclear security laws and regulations, national detection strategy, national response system and response plan, concepts of operation, standard operating procedures).

SS4 The NSSC scientific support programme, particularly for R&D, engages in cooperation and information exchange including:

- Scientific cooperation with other research centres, scientific institutes and universities within the State;
- Regular contact with different national and international scientific communities and organizations;
- Participation in international conferences and other scientific forums;
- Surveys of scientific publications and new technological developments.

SS5 There is a process in place to evaluate the effectiveness and efficiency of the scientific support services provided including exercises and other similar performance tests conducted at the national level.

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