



Accession to and Impact of the Amendment to the Convention on the Physical Protection of Nuclear Material on States Parties

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Cover images:

IAEA Director General delivers remarks at the Preparatory Committee for the 2021 Conference of Parties to the Amendment to the Convention on the Physical Protection of Nuclear Material – Photo Credit: Dean Calma / IAEA

An outdoor tour at Japan's Physical Protection Exercise Field as part of an IAEA training course on nuclear security – Photo Credit: Dean Calma / IAEA

An outdoor tour at Japan's Physical Protection Exercise Field as part of an IAEA training course on nuclear security – Photo Credit: Dean Calma / IAEA

Joint IAEA-EU Project - Handover Ceremony for Radiation Detection Equipment to IAEA Member States – Photo Credit: Dean Calma / IAEA

Nuclear scientists, law enforcements officials and forensic specialists from around the world attended an international workshop on nuclear forensics – Photo Credit: Dean Calma / IAEA

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Executive Summary

The Amendment to the Convention on the Physical Protection of Nuclear Material, an enhancement of the original convention, requires States Parties to expand physical protection measures for nuclear material and nuclear facilities. In line with these ambitious goals, and as a supplement to the sole international legally binding instrument requiring the protection of nuclear material and nuclear facilities, the Amendment is also instrumental in preventing and combatting a wider range of related offences and enhancing cooperation between States Parties where it is in force. Although the Amendment has been in force for more than five years and has made strong contributions to the global nuclear security regime, it has yet to reach universal adherence.

To assess the conditions surrounding universal adherence, the Vienna Center for Disarmament and Non-Proliferation (VCDNP) set out to examine 1) implementation impact of the Amendment on States Parties, and 2) measures that would facilitate effective implementation of the Amendment and expedite its universality. To start, the VCDNP carried out a survey of States Parties to the Amendment with diplomatic missions of States Parties. In total, twenty eight States — representing all inhabited continents and with differing scopes of nuclear activities — provided responses. These covered a range from countries that maintain only limited activities or amounts of nuclear material to countries with fully developed nuclear power programmes. Following the collation of responses, the VCDNP held a two-day virtual workshop aimed at facilitating the exchange of national experience in implementation of the Amendment and discussing challenges to its universalization.

The survey results revealed impacts on States Parties on multiple fronts, including the responsible national authorities; legislative and regulatory frameworks; and the three topical areas of the Amendment. For example, in most cases, joining the Amendment did not entail changes in the structure of national bodies responsible for its implementation, nor did it require increasing budgets or hiring additional staff. While the Amendment required a majority of surveyed States to adopt or amend legislative and regulatory frameworks in line with Amendment provisions, this process was often concluded within a timeframe of three years.

Initial results of the survey highlight that Amendment provisions related to topical areas such as physical protection of nuclear material and nuclear facilities, international cooperation or criminalization were effectively implemented. Additionally, a majority of the surveyed States still found it necessary to offer training in physical protection and criminalization provisions of the Amendment to relevant national stakeholders.

On international mechanisms and forums, virtually all project participants considered periodic review conferences (RevCons) would be beneficial for the global nuclear security regime in order to identify evolving threats, exchange best practices and discuss possible policy adjustments. Results also underline the usefulness of international cooperation mechanisms facilitated under the Amendment, which was used by most of the participating States to exchange information and experience, in addition to provisions for giving and

receiving assistance. Nearly all respondent States also highlighted the valuable role of international assistance provided by individual States, and also intergovernmental and non-governmental organizations (NGOs).

The survey confirmed that benefits for States Parties far outweighed potential downsides. Parties to the Amendment enhanced national, regional and global security; increased cooperation both between States Parties and bilaterally with international organizations, such as the International Atomic Energy Agency (IAEA); and helped States Parties to implement the legally binding UN Security Council Resolution 1540 and the International Convention on the Suppression of Acts of Nuclear Terrorism. To date, there are several key challenges to its universalization, which include but are not limited to: (1) inadequate knowledge in non-signatory States about Amendment provisions and the domestic changes they entail, (2) lack of internal resources for effective implementation, and (3) insufficient awareness of the international tools and assistance available for implementation. This report details recommendations on the effectiveness of implementation of the Amendment and further promotion of its universalization.

While universal adherence to the Amendment to the CPPNM by States Parties is still a distant goal, collected recommendations have demonstrated that these challenges are not insurmountable, in particular, the following recommendations to States Parties:

- Establish coordination mechanisms at the national level to enhance national awareness of Amendment provisions;
- Establish points of contact in every State agency or institution involved in or instrumental to IAEA International Physical Protection Advisory Service (IPPAS) missions;
- Review legislative and regulatory frameworks to ensure correspondence with Amendment provisions;
- Implement relevant treaties and accords in parallel where possible, to include benefits from implementation of the Amendment alongside International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT);
- Explore new lines of outreach to States that are not yet party to the Amendment, including outreach through global and regional organizations, such as the Inter-Parliamentary Union, the Pacific Islands Forum, and the Organization of American States;
- Carry out exercises with neighbouring States to acquire valuable experience in coordinated emergency response and other areas;
- Maximize synergies between nuclear safety and security where possible.

International organizations, NGOs and other relevant entities could also be instrumental in furthering the universalization and implementation of the Amendment through the following potential measures:

- The IAEA could hold a presentation or relevant workshops at the 2022 Conference of the Parties to the Amendment to the CPPNM on resources and tools it makes available for States Parties;
- For the IAEA in the case of IPPAS missions, emphasize that a receiving State does not bear mission costs and that the participation of experts from other countries does not compromise confidentiality of information received during a mission;
- The IAEA could pursue finalization of the update of Handbook on Nuclear Law and Handbook on Nuclear Law: Implementing Legislation;
- Matchmaking or cooperative mechanisms, including UNSCR 1540 reporting mechanism and the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, could be heightened;
- NGOs or national government entities could create and regularly update a database of available resources for States Parties and disseminate it on national, regional and international levels.

For activities in 2022, this report is particularly relevant in view of the Conference of the Parties to the Amendment, where most of the surveyed States have also actively participated in preparatory work. This nuclear security forum of utmost importance is approaching, but there is still enough time left to reinforce stakeholder efforts in the effective implementation and universalization of the treaty. The 2022 Conference of the Parties to the Amendment to the CPPNM provides an opportunity to consider the implementation of report recommendations.

The survey and project activities led by the VCDNP in 2021 were carried out with support from the International Science and Technology Center in Kazakhstan and the Swiss Federal Department of Foreign Affairs.

Amendment to CPPNM: impact on States Parties and road to universalization

1. Introduction

Adopted by consensus on 8 July 2005 by the diplomatic conference of States Parties to the original Convention, the Amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM) materialized, following six years of preparatory work. More than a decade later, the Amendment entered into force on 8 May 2016 in accordance with Article 20 of the CPPNM. In 2021, the Vienna Center for Disarmament and Non-Proliferation (VCDNP) conducted project activities that explored how the implementation of the Amendment affected States Parties thereto and what measures might facilitate its effective implementation and its universality.

The CPPNM and its Amendment are the only legally binding agreements on physical protection of nuclear material and nuclear facilities. However, adherence to these documents is far from universal, and the number of States Parties to the Amendment still lag behind the number of States that have joined the original Convention – 126¹ are party to the Amendment and 163² to the original CPPNM, respectively. Indeed, effective implementation and universalization of the Amendment remains a fundamental pillar to “strengthen worldwide the physical protection of nuclear material and nuclear facilities used for peaceful purposes.”³

Launched in 2021, VCDNP project activities included an analysis of publicly available sources, a workshop, and a comprehensive survey sent to diplomatic missions in Vienna, Austria. The VCDNP examined national legislation, IAEA informational resources, and other open source information. A two-day virtual workshop organized by the VCDNP facilitated the exchange of national experience in Amendment implementation and the discussion of challenges to its universalization. Participants in the workshop included representatives from States Parties, States that have not yet signed nor ratified the Amendment and also officials from intergovernmental organizations and experts from non-governmental organizations (NGOs).

1 Status of the Amendment to the Convention on the Physical Protection of Nuclear Material as of 23 September 2021. Available at: https://www-legacy.iaea.org/Publications/Documents/Conventions/cppnm_amend_status.pdf.

2 Status of the Convention on the Physical Protection of Nuclear Material as of 20 September 2021. Available at: https://www-legacy.iaea.org/Publications/Documents/Conventions/cppnm_status.pdf.

3 Amendment to the CPPNM, tenth preambular paragraph.

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The survey was based on a questionnaire developed by the VCDNP, which was intended to elicit comparative information on the following nine issues related to the implementation of the Amendment:

- Impact on the responsible national authorities, and on legislative and regulatory framework;
- Implications for legislative and regulatory framework;
- International assistance in preparing the State to become a party to the Amendment and implementation thereof;
- Three main areas covered by the Amendment: physical protection, criminalization, and international cooperation;
- Major challenges during ratification and implementation of the Amendment;
- Benefits of joining the Amendment;
- Lessons learned from Amendment ratification;
- Submission of information to the IAEA on national legislation and regulations related to the Amendment; and
- Preparation for the 2022 Conference of Parties to the Amendment.

Following consultations with diplomatic missions of States Parties to the Amendment, a questionnaire was circulated on the condition of non attribution of responses. In total, 28 completed questionnaires were received. They were diverse in many aspects, including scope of nuclear activities on respective territories, geographical location, population, and economic development. Some became party to the Amendment recently, while others have more than five years of experience after ratification.

Referred to as project participants, all surveyed States provided a wide range of replies to identify common patterns related to 1) becoming party to the Amendment, and 2) its implementation. The participants' responses were then analysed both as a collective and, subsequently, according to the relative scale of their respective nuclear programmes or activities. For the purposes of the research, the States that participated in the project were divided into three groups:

- Group 1:** States that do not have any nuclear research facilities⁴ or nuclear fuel cycle facilities (9 States);
- Group 2:** States with nuclear material in research facilities only (7 States);
- Group 3:** States with nuclear material in nuclear fuel cycle facilities used for power generation (12 States).

The project was conducted with support from the International Science and Technology Center in Kazakhstan and the Swiss Federal Department of Foreign Affairs.

4 This includes research reactors, critical and subcritical assemblies and associated conversion, fuel fabrication and spent fuel storage facilities.

2. Review of survey results on national entities and provisional changes

This section provides an overview of the survey results. The [Annex](#) to this report provides more specific and detailed survey results.

2.1 Impact on responsible national authorities

Initial survey results showed that ratification of the Amendment did not have substantial implications for responsible national authorities. Indeed, domestic entities experienced only ‘some changes’ in just a quarter of States participating in the survey. However, in States where more substantive changes were necessary, the most cited included: establishing new authorities, changing names of the existing authorities and expanding the range of respective responsibilities. For one State, there was a collateral, albeit positive, impact on a new nuclear regulatory authority (NRA) since joining the Amendment helped it to secure necessary budgetary resources and competences to fulfil its role in nuclear security.

Additional budget spent on:



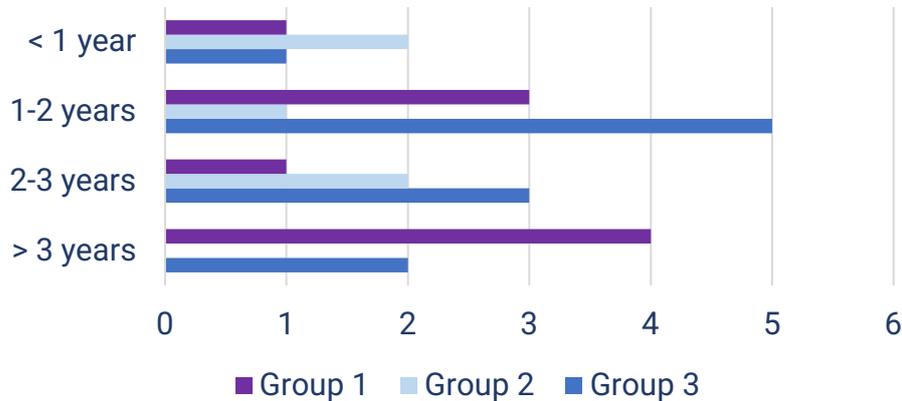
Regarding budgetary considerations, the implementation of the Amendment did not require hiring additional staff for responsible national authorities in most participating States. Nor did it entail increasing budgets of the responsible national authorities in three-quarters of the surveyed States, while the remainder of respondents required additional funds for hiring new staff or consultants, providing training opportunities for employees and covering expenses associated with the broader scope of responsibilities and increased number of inspections.

2.2 Impact on legislative and regulatory frameworks

National legislative and regulatory frameworks were subjected to a substantial impact from Amendment provisions, as the vast majority of project participants adopted new laws and regulations or amended existing ones. Article 14 paragraph 1 of the original Convention, which has not been altered or substituted by the Amendment, requires that

all States Parties inform the IAEA of their laws and regulations which give effect to the Convention and the Amendment. Three-quarters of the project participants submitted the required information to the IAEA. In five of seven States that replied negatively on reporting to the IAEA, the process of adopting new laws/regulations was ongoing. More generally, more than half the participants reported that they had adopted new laws or regulations, and almost three-quarters of States had amended existing frameworks. Usually, one or two new laws/regulations were required to be adopted.

Time for adopting/amending laws and regulations



More specifically, as to the time needed for the adoption of new laws or regulations, or amending existing ones, the majority of participants (19 States out of 28) completed these procedures within three years. For six States, more than three years were required and the process is ongoing in five States.

2.3 Provisions on physical protection.

For three-quarters of participating States, undertaking physical protection measures in line with the Fundamental Principles outlined in the Amendment was feasible. While nearly half the respondents implemented all measures after becoming party to the Amendment, the others adopted all or some measures prior to ratification. As a result, two participating States went beyond the Amendment provisions, and their national laws and regulations now additionally cover topics such as insider threats, cyber security, sensitive nuclear technology, and drones. Furthermore, the establishment and implementation of quality assurance policy and programmes, the development and implementation of a programme improving nuclear security culture, and the introduction of the ‘defence in depth’ concept were also referenced as ‘above and beyond’ measures.

While a majority of project participants had established a physical protection regime prior to joining the Amendment, almost all surveyed States found it necessary to provide training in the relevant Amendment provisions, including training for employees of the NRA, industry, operators, and national law-enforcement agencies. The majority of States in Groups 1 and 2 noted the IAEA as the principal training provider, while approximately half the States in these groups also relied on their national NRA for domestic capacity building.

2.4 Provisions on international cooperation

The majority of participating States made use of cooperation mechanisms with other States Parties, the IAEA or other international organizations, as provided under the Amendment. This included the exchange of sensitive information, sharing of experience, strengthening national capacities in nuclear security, and support for technical cooperation programmes, including support through the IAEA. Also, Article 5 of the Amendment stipulates that States Parties should designate a point of contact (PoC) for matters covered by the Amendment. In this regard, all project participants designated a PoC for this purpose. Moreover, designates of virtually all surveyed States participated in the meetings for PoCs convened by the IAEA.

Additionally, more than three-quarters of the surveyed States confirmed having received assistance from international organizations or other States: five States did so before they became a party to the Amendment; nine States after joining the Amendment; six States both before and after officially joining the Amendment; and two States did not provide a response. Nearly two-thirds of participants benefited from capacity building offered by international organizations and other countries for employees of the NRA, law enforcement agencies, operators and other national stakeholders.

Twenty participants responded that there were no challenges related to cooperation with other States, and only one respondent noted that cooperation with States not party to the Amendment was difficult in the domain of joint exercises and planning, which was subsequently covered by other existing arrangements. Six States reported no cases of such cooperation, yet one specified that it had a number of other bilateral and multilateral agreements that enabled information exchange on related topics.

2.5 Criminalization provisions

Implementation of Article 7 of the Amendment, which criminalizes certain offences related to nuclear material and nuclear facilities, did not have significant implications for participating States. A vast majority, 25 of 28, replied that there were no criminal cases to date with regard to the offences criminalized pursuant to Article 7 of the Amendment, where legislation was newly promulgated under the Amendment or where existing legislation was reconciled or expanded to be in line with Amendment. Therefore, only three States mentioned cases of such offences. The majority of States, nevertheless, provided relevant training for law-enforcement agencies, operators, court judges and other stakeholders. Training sessions in physical protection and in criminalization were usually provided by the national NRA, the IAEA or other States.

“The security environment evolves over time and our nuclear security arrangements need to evolve to meet changes in the threat. In some respects, this means the job is never ‘done’”

2.6 Challenges

The survey results reveal that the vast majority of participating States encountered at least one challenge associated with adequate legislative and regulatory frameworks to implement the Amendment. Lack of awareness and low level of cooperation or coordination between national stakeholders were the most cited difficulties. Among other challenges at both ratification and implementation stages included modification of the national legislative and regulatory frameworks and limited resources, such as expertise, staff, equipment and funds. Yet, each group faced unique challenges in implementing the Amendment:

“Challenges included education and awareness sessions. Since our country has no nuclear programme, then it has proven difficult to have agencies and individuals to buy into or become interested in obligations on any matter dealing with the issue of 'nuclear'...so education is ongoing”

Group 1 was affected slightly more than other groups with regard to long term vision for nuclear security and its perception by relevant national stakeholders. These challenges were generally addressed through increased outreach, awareness raising and capacity building activities. Two of the nine States in Group 1 noted the issue of limited resources for successful implementation of the Amendment, which included impact on human resources and expertise in development of regulations, training possibilities, equipment and other funds.

Group 2 cited the lack of strategic vision and different perceptions of nuclear security as one of the most challenging difficulties. One State reported difficulties in defining a medium and a long-term nuclear security strategy, which would be in line with the provisions of the Amendment and the CPPNM.

Group 3 described the ratification process as generally challenging. Three States mentioned preparation of new national nuclear security legislation and, in particular, provisions of Article 7 of the Amendment being incorporated into the national legal framework, which requires the criminalization of a number of offences, including smuggling nuclear material and sabotage of nuclear facilities. Further, seven of nine States reported that there were cases of transit of nuclear material through their respective national territories.

Overall, the most cited general challenge was the ratification process itself, which was considered “very lengthy” or “lengthy and time consuming”. Additional issues specific to the implementation of the Amendment included developing medium and long-term programmes for implementing the Amendment, enhancing nuclear security culture, and — more generally — ensuring continual improvement in areas related to nuclear security.

Three States referenced coordination challenges to achieve the approval of national laws by multiple authorities, which would provide a green light for ratification of the Amendment. In another State, the lack of a single regulatory body was identified, which would be necessary to launch a policy and a clear position on nuclear security; the establishment of a single regulatory body addressed and resolved the issue.

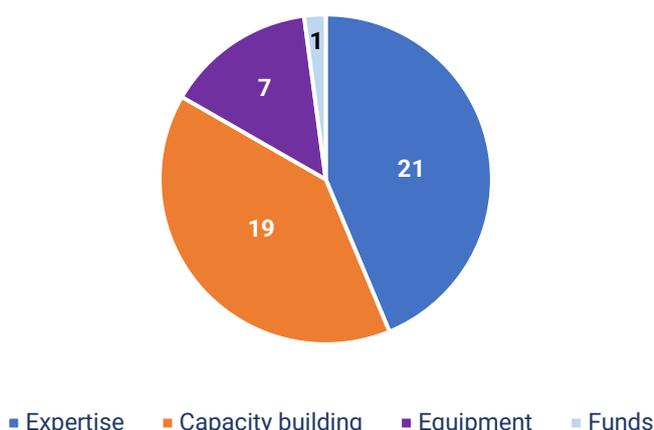
For five States, improving cooperation and coordination between a multitude of federal stakeholders at the national level was identified as a primary and specific challenge. In particular, it was reported that “fragmented laws being implemented by different institutions” was an issue, while another State emphasized the lack of cooperation between law-enforcement entities. This demonstrates that greater coordination on multiple fronts is needed in order to meet the Amendment’s provisions.

One State found it challenging to attain an arrangement with security agencies and port authorities to track the transportation of nuclear material that moved through ports. The issue was resolved through additional cooperation with the relevant national stakeholders, consultation with the IAEA and participating in IAEA capacity building sessions. Beyond the national level, the need to improve cooperation and coordination at the international level was also considered challenging.

2.7 Role of international assistance

The survey results highlighted the role of international assistance and cooperation in facilitating the ratification process and helping to ensure smooth implementation of the Amendment by States Parties. All but four participating States received support from international organizations or other States, which addressed solutions for about half of the challenges outlined by the project participants. The participants most commonly cited benefits of international assistance, such as the provision of expertise, capacity building and equipment as part of international assistance. These were often made available by the IAEA, the US Department of Energy (US DOE), the World Institute for Nuclear Security, or INTERPOL. The survey revealed, nevertheless, that some States are not aware of certain types of internationally available support for several reasons, such as high employee turnover at the NRA or other relevant bodies.

Types of assistance



International assistance was highlighted as a two-way benefit for a number of participants. It was highlighted that the respondents also provided assistance to other States Parties to the Amendment while being supported by other States or international organizations. These benefits were mostly concentrated across the same region, and the assistance usually consisted of the provision of expertise or capacity building.

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2.8 Lessons learned

On a more fundamental level, establishing a national nuclear security regime prior to joining the Amendment generally expedited ratification and implementation of the Amendment for three States from an administrative standpoint. Similarly, for another three States, adherence to a broader range of the international nuclear security instruments – for example, the International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT) – was crucial for ensuring effective implementation of the Amendment.

“While adopting the Amendment is a clearly defined step-change in the national regime, the implementation of new nuclear security measures or approaches, especially at the facility level, is something that changes over time in response to the stepwise change in policy/legal settings”

Lessons shared by other project participants echoed challenges regarding raising awareness of national stakeholders, enhancing cooperation between them, and clearly defining roles. Moreover, the importance of high-level initiatives that could promote the Amendment at the national level became clear.

Among other common themes, States underlined the need to avoid unnecessary delays in transposing the Amendment provisions into the national legislative and regulatory frameworks, for which establishing and enhancing institutional infrastructure is highly instrumental. States also underlined the usefulness of international cooperation and assistance; and the important role of human and financial resources.

2.9 Benefits

Building on the global nuclear security framework, virtually all project participants commended the Amendment for conferring a number of benefits both at the international and national levels. In most instances, adherence to the Amendment enhanced international and regional cooperation. It also enhanced security at all three levels: national, regional, and global. Moreover, the responses of the participants reiterated that the Amendment was an integral element of the complex web of international security agreements, as it reinforced the global nuclear security regime and helped States to fulfil their obligations under UN Security Council Resolution 1540.

“The State will have legal authority to investigate, persecute, criminalize and extradite matters involving nuclear or radioactive material in its territory and in transit”

“Joining the Amendment facilitated the transfer of nuclear science and technology for peaceful uses. This is very critical for socio-economic development”

The Amendment to the CPPNM is one useful mechanism in building a global nuclear security regime, and its benefits have been shared by participants. To understand the unique benefits highlighted by group, participants in Group 1 noted the following:

- As a strong basis for the adoption of laws and regulations, the Amendment vests the relevant national competent body with necessary authority for physical protection;
- It furthers access to nuclear science and technology for peaceful uses;
- NRA staff members are properly equipped and gain experience in implementing measures contained in the Amendment in case a decision to build research or power reactors is taken and nuclear material is present in the country in the future;
- The global non-proliferation regime is enhanced;
- UNSCR 1540 obligations of States Parties to the Amendment are fulfilled;
- International and regional support is provided, e.g. in building capacity and establishing physical protection infrastructure;
- It promotes exchange of experience in physical protection;
- It improves global and regional security;
- The Amendment harmonized procedures between States Parties, thus providing a global physical protection regime.

The Group 2 and Group 3 States (with nuclear material and experience in operating research facilities or nuclear power programmes, respectively) echoed the following responses regarding the Amendment:

- The Amendment prompted the creation of national legal and regulatory frameworks on physical protection;
- It helped to fulfil UNSCR 1540 obligations;
- It boosted international cooperation and support;
- It laid a foundation to the global physical protection regime.

Group 3 participants additionally identified the following specific benefits related to the implementation of the Amendment:

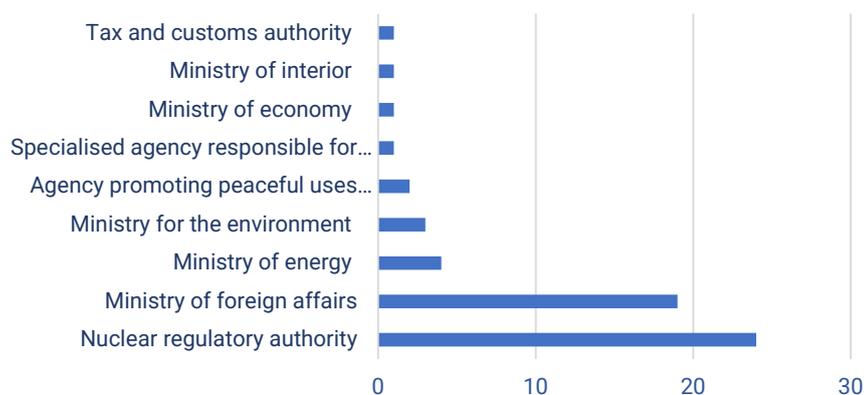
- Building up mutual trust and understanding;
- Creating new momentum for strengthening domestic physical protection regime;
- Bringing greater clarity to responsibilities for physical protection in the field.

On resources, one participant commented that, in view of the limited number of available personnel, “patience is required”. For several States, the Amendment acted as a catalyst and basis for the adoption of nuclear security related laws and regulations, and also for assigning correspondent responsibilities and powers to the national responsible authorities.

2.10 Preparatory work and 2022 Conference of Parties to Amendment

In the run-up to the 2022 Conference of the Parties to the Amendment to the CPPNM, mandated by Article 16 of the Amendment, States’ representatives took part in the meetings of the Technical and Legal Expert Group and/or the Preparatory Committee. Indeed, the 2022 Conference will be critical for discussing/sharing experience in implementing the Amendment. However, not all States Parties may be able to send representatives of all relevant national stakeholders responsible for implementation. With regard to the involved parties, two or more State bodies usually led national preparations for the Conference, with the most cited combination being the NRA and the ministry of foreign affairs. In remaining replies, the importance of the following entities was highlighted: an agency promoting peaceful uses of nuclear technology; a specialized authority responsible for nuclear security; tax and customs authorities; and ministries of energy, environment, economy, and the interior.

Authorities preparing for the upcoming 2022 Conference



Some States, however, indicated a conflicting internal agenda, the lack of human and financial resources or absence of invitation as reasons for not attending all or some of these meetings.

Project participants nearly universally agree on the value of periodic review conferences for related ongoing and future work. One common theme in responses was sharing and evaluating States Parties' best practices and implementation experience, identifying gaps in the implementation, and discussing possible adjustments.

“Any meeting that can allow States Parties to exchange information, share their experience and benefit from it is beneficial and should be popularized”

“States should use the 2022 Conference in order to create a forum for parties to engage in regular dialogue on how the Amendment is being translated into the on-the-ground nuclear security progress and to monitor and identify gaps in implementation, review progress, promote continuous improvement and discuss emerging nuclear threats”

The 2022 Conference is a unique and most important forum for discussing issues related to nuclear non-proliferation, disarmament and the peaceful use of nuclear energy. By highlighting the importance of the 2022 Conference and of nuclear security in general in the outcome document of the RevCon, States Parties to the NPT could increase momentum in support of the universalization of the Amendment.

3. Overall implementation and universalization of Amendment: ongoing difficulties and recommendations

The VCNDP survey confirmed that States Parties to the CPPNM Amendment still face difficulties in implementation. General lack of awareness and capacity, and existence of other national priorities are among the major hurdles inhibiting countries from adhering to the Amendment. The following recommendations are directed primarily to the States Parties to the Amendment as they bear the main responsibility for implementation. Yet, recommendations are also directed to the IAEA as the most authoritative international organization regarding nuclear security and also to NGOs concerning their role.

On tackling the topic of cooperation, a large number of measures and approaches were adopted across different States, which included: (1) reviewing the existing nuclear law; (2) raising awareness on the provisions of the Amendment and how they expand the scope of the original Convention; (3) designating contact and coordination managers in each institution; and (4) creating an informal body that includes all major stakeholders dealing with nuclear issues in the country in order to exchange information on a regular basis.

3.1 Recommendations on enhancing effectiveness of implementation

The lack of awareness of the Amendment and low level of cooperation and coordination between national stakeholders during its ratification and implementation were among the most recurrent challenges identified in the survey. To address these, States Parties might consider establishing or enabling coordination mechanisms (potentially through PoCs) at the national level, which would facilitate continuous awareness raising, broad collaboration between all stakeholders responsible for Amendment implementation, and clear definition of their roles. These mechanisms may take the form of a group of task forces or nuclear partners that meets periodically to discuss a wider range of nuclear related issues, including nuclear security topics. Such coordination may, in particular, facilitate expeditious identification of a relevant PoC in every State agency and will be instrumental in conducting preparations for IAEA's International Physical Protection Advisory Service (IPASS) missions.

Over time, the nuclear security environment continues to evolve and requires that arrangements on nuclear security, which also includes physical protection of nuclear material and facilities, be adequate in addressing new threats. In this regard, it is advisable for States Parties to continuously review legislative and regulatory frameworks to ensure that they correspond to the Amendment provisions and also embrace the latest developments relating to nuclear security beyond the topics of the Amendment, such as insider threats, drones, sensitive technology, and computer and cyber security. States Parties should also start or continue to provide regular updates to the IAEA on national laws and regulations which give effect to the CPPNM and its Amendment, as required by Article 14.1 of the CPPNM. It is desirable that States Parties translate their laws and regulations into English, which will make such updates beneficial for other States Parties and provide them with insights on possible improvement in their legislation and regulations.

In its thirteenth preambular paragraph, the Amendment underlines its complementarity to the safe use, storage and transport of nuclear material and the safe operation of nuclear facilities. Given the same objective of protecting people and the environment from harmful effects of ionizing radiation, it is important for States Parties to the Amendment to explore and maximise synergies between nuclear safety and security, including in the fields of technology and emergency preparedness and response.

The Amendment and ICSANT are the main, mutually reinforcing internationally binding instruments in the area of security of radioactive material. Although there exist some differences regarding their scope, as specified further in the report, each offer numerous common benefits to States Parties, including a basis for international cooperation, internationally agreed definitions and minimum standards, and denial of safe haven for offenders. For States Parties to both the Amendment and the ICSANT, there is a benefit to implement the two treaties in concert in order to avoid overlaps in legislation and ensure their efficiency and coherence.

The mechanism of international cooperation established by the Amendment featured prominently discussions at the workshop and in the survey. However, some States Parties still lack practical experience in this regard. In consultation with IAEA and other relevant international organizations, States Parties could consider carrying out exercises with neighbouring States to build valuable experience in international cooperation on physical protection of nuclear material and nuclear facilities.

States Parties to the Amendment should utilise regional organizations of which they are members as forums for discussing the implementation of the Amendment. One such example is the Organization of American States.

3.2 Recommendations and role of international assistance for joining and effective implementation

In general, parties to include States, intergovernmental organizations, and non governmental organizations should understand that not all officials are aware of assistance programs in support of ratification and implementation of the Amendment and in enhancing nuclear security. While all States Parties can make use of available instruments where necessary, continuous and active promotion of support mechanisms or tools through a range of forums would have positive impact on the implementation of the Amendment and its universalization. First, as the convener of regular meetings of national points of contact with regard to the CPPNM and its Amendment, it would be beneficial for States Parties if the IAEA makes use of the conference in order to reiterate the availability of a range of assistance that can be provided to States Parties. Many participants also cited the usefulness of regular review conferences for taking stock of evolving threats and discussing the impact of emerging technologies on the physical protection of nuclear material and nuclear facilities.

Second, the IAEA could hold a presentation at the 2022 Conference of the Parties to the Amendment to the CPPNM on resources and tools it makes available for States Parties. There are currently a number of States that have signed the Amendment but have yet to ratify it. Inviting these parties to the 2022 Conference would serve as an additional

incentive to finalise the ratification process expeditiously and thus to be able to participate fully in the Conference.

Third, the IAEA and States Parties to the Amendment could encourage other States Parties to take advantage of the IAEA assistance in the ambit of nuclear security. States Parties could contribute to the knowledge of the IAEA assistance and dispel misconceptions around it through promotion of testimonies of its utility and effectiveness. For example, in the case of IPPAS missions, it may be worthwhile to emphasize that a receiving State does not bear costs of a mission and the participation of experts from other countries does not compromise confidentiality of information received during the mission.

Fourth, apart from reaching out directly to assistance providers, there are existing mechanisms that match requests of assistance from States Parties with offers from other States or organizations in a position to provide assistance. One such matchmaking mechanism is administered by the UN Security Council Committee established pursuant to resolution 1540 (1540 Committee)⁵ and another one – by the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction.⁶ Where possible, international assistance providers should cooperate or coordinate their efforts to avoid overlaps and maximize the effectiveness and efficiency of their contributions.

Fifth, many non governmental organizations (NGOs) have both capacity and willingness to provide assistance to States that wish to join the Amendment or implement it more effectively. Given that not all States are aware of these resources, NGOs could create a regularly updated database of available resources and disseminate it through international organizations, such as the IAEA and the United Nations, and also regional organizations, such as the Organization of American States, the Association of Southeast Asian Nations or the Pacific Islands Forum.

Sixth, the IAEA could contribute to effective implementation of the Amendment and also to its universalization by finalising the update of Handbook on Nuclear Law⁷ and Handbook on Nuclear Law: Implementing Legislation.⁸ While these publications are of invaluable aid for drafting new or revising existing laws on nuclear security and other nuclear fields, they were nevertheless released in 2003 and 2010, respectively.

Lastly, tailoring assistance activities to needs and perceptions of recipient States could be beneficial for improving implementation record of States Parties. For example, the fact that some countries have never experienced the threat of terrorism or do not have nuclear material or nuclear facilities on their territory may create the perception of the lack of threat which slows down the Amendment implementation.

5 More information is available on the 1540 Committee website:
<https://www.un.org/en/sc/1540/assistance/general-information.shtml>.

6 More information is available on the Global Partnership's website:
<https://www.gpwmd.com/matchmaking>.

7 Carlton Stoiber et al, "Handbook on International Law," IAEA, July 2003. Available at:
https://www-pub.iaea.org/mtcd/publications/pdf/pub1160_web.pdf.

8 Carlton Stoiber et al, "Handbook on Nuclear Law Implementing Legislation," IAEA, 2010.
Available at: https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1456_web.pdf.

3.3 Recommendations on Outreach to States not yet party to Amendment

States that are not yet party to the Amendment may have competing priorities or experience lack of financial resources which prevent them from participating in international forums that discuss uses of nuclear technology, including nuclear security. In cases when they do participate, they may be represented only by officials of the ministry of foreign affairs or the nuclear regulatory body. States Parties to the Amendment, the IAEA and other organizations should thus keep exploring new lines of outreach to States that are not yet party to the Amendment, including through global and regional organizations such as the Inter-Parliamentary Union, the Pacific Islands Forum, and the Organization of American States.

In order for outreach activities to bear results, States, intergovernmental organizations and other entities could tailor them to specific country or regional needs and perceptions of nuclear security threats. This approach is key to increasing the appreciation of the importance of the Amendment.

3.4 Lessons learned and good practices

Overall, project participants offered valuable lessons which can serve as recommendations to implement the Amendment. On lessons related to national stakeholders' awareness and cooperation, Group 1, or States without nuclear material used for research or power generation noted the following:

- Ratification of the Amendment raised awareness among national authorities, operators and society in general of the importance of the secure use of nuclear technologies and their benefits for the State;
- Cooperation is crucial between national security related bodies, both before and after becoming party to the Amendment;
- Involving nuclear industry as a key stakeholder in implementation;
- Raising awareness of the importance of nuclear security at the junior or mid-levels of relevant ministries, especially for officials in small States, where such officials may manage several portfolios where nuclear security is not readily a priority.

“In some small island developing States an individual may perform several functions but it is important to have someone who is passionate and dedicated to ensuring that the process [of adhering to nuclear security instruments] is completed.”

Group 2 offered additional advice (participants with nuclear material in research facilities), including the following:

- Establishing effective response and coordination mechanisms is crucial in the case of a nuclear security incident, where prevention can be the most beneficial element in nuclear security;
- Bringing national laws in line with the Amendment provisions can be difficult and processes can last longer than expected;
- Adopting the Amendment is a clearly defined step-change in the regime, yet implementation of new nuclear security measures or approaches, especially at the facility level, responds over time in response to policy or legal changes.

Group 3 (States with nuclear material in nuclear fuel cycle facilities used for power generation) had particular interest in providing lessons related to the relationship of the Amendment with other international instruments. These observations include the following:

- A majority of the Amendment requirements were satisfied as a result of a prior ratification of other comparable international treaties;
- Full implementation of the amended Convention cannot be achieved without the State's integration into the international nuclear security architecture;
- States Parties to the Amendment and ICSANT could consider the relationship between the criminalization provisions of the two agreements.

“The ratification of the Amendment constitutes a fundamental step to raise awareness among national authorities, operators and society in general, that just as this technology provides necessary benefits for health and industry, it also has inherent risks that must be faced officially by all States”

Select States with nuclear power echoed comments by States without this capability on the importance of establishing and strengthening the regulatory and legislative frameworks and institutions that support them. Other Group 3 participants offered the following additional observations on implementation of the Amendment:

- It is important to define the competent state authorities responsible for ratification process and to ensure each of them understands its roles and responsibilities;
- Assistance of other countries and the IAEA is vital for successful implementation;
- Sufficient funds are a prerequisite for enlarging the regulatory body and training its experts in nuclear security.

4. Conclusions

In becoming party to the Amendment to the CPPNM and ensuring its effective implementation, States contribute to enhancing the security of nuclear material and nuclear facilities used for peaceful purposes worldwide and strengthening the international nuclear security framework in general. The present project underlined that nuclear security is not a final destination, but rather continuous work to detect new and evolving threats and effectively respond to them. Indeed, as threats evolve, States Parties must adapt to the latest challenges or developments relating to nuclear security beyond the current topics of the Amendment, such as insider threats, drones, sensitive technology, and computer and cyber security.

There are still a number of challenges that prevent universalization of the Amendment to the CPPNM. Indeed, the project survey and related activities identified several challenges encountered while ratifying and implementing the Amendment. First, a lack of awareness and low level of cooperation and coordination between national stakeholders were the major recurrent issues in both effective ratification and implementation of Amendment measures. Second, modification of the national legislative and regulatory frameworks involve sometimes lengthy processes or multiple layers of legislation to untangle. Third, limited resources the surveyed States had in their possession in order to effectively implement the Amendment, such as expertise, staff, equipment or financial means.

Conversely, a number of recommendations alleviate these challenges. Broader topical recommendations covered in the report included the following:

- Enhancement of general coordination and effectiveness of implementation of the Amendment;
- Support of international assistance mechanisms for joining and effectively implementing the Amendment;
- Outreach to States that are not yet party to the Amendment;
- Promotion and increase of attendance of representatives at the 2022 Review Conference of the Parties to the Amendment.

In support of these goals, nuclear security continues as a focus of attention of all States, which bear the exclusive responsibility for the establishment, implementation and maintenance of nuclear security regime. Taking into consideration potential transboundary consequences of a nuclear security incident, other countries, the IAEA, the UNODC, the INTERPOL and other intergovernmental and non governmental stakeholders play an important role in providing assistance to States implementing the Amendment, reaching out to States that are not yet party to it, and offering research and recommendations on nuclear security.

It is desirable for enhancing nuclear security narrative that States Parties seize the opportunity to meet in person provided by the 2022 Conference and agree to hold periodic review conferences in the future, where possible. Such conferences would give a renewed sense of purpose to stimulate additional steps towards strengthening global nuclear security by offering a platform for States Parties to exchange their practices and implementation experience, identify gaps in the implementation, discuss evolving threats and maintain momentum of universalization efforts.



To this end, Vienna Center for Disarmament and Non Proliferation is pleased to make its contribution in this regard by conducting this project and publishing the present report. States Parties may gain insights by learning from their peers' experience and lessons learned during the implementation of the Amendment. States that are not yet party could be reassured that the Amendment is not an exclusive club, and moreover, discover what joining the Amendment entails in practical terms. States in both categories would also discover what assistance is available internationally, and entities that provide such assistance would find the report useful for fine tuning their activities.

The detailed results of the survey conducted by the VCDNP are contained in the [Annex](#) to this report.



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