

## II. International cooperation to enhance nuclear security

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### 2016 Nuclear Security Summit meeting

On 31 March–1 April 2016 leaders from 52 countries, including 35 heads of state and government, and representatives of the United Nations, the European Union (EU), the International Atomic Energy Agency (IAEA) and the International Criminal Police Organization (Interpol) took part in a Nuclear Security Summit meeting in Washington, DC.<sup>1</sup> It was the fourth and final meeting in a series of biennial summit meetings on combating the threats of nuclear terrorism initiated by United States President Barack Obama in 2009.<sup>2</sup> The previous Nuclear Security Summit meetings were convened in Washington, DC, on 12–13 April 2010; in Seoul, South Korea, on 26–27 March 2012; and in The Hague, the Netherlands, on 24–25 March 2014.<sup>3</sup>

Under the Nuclear Security Summit process participating states and international organizations sought to strengthen legal, regulatory and technical measures to secure vulnerable nuclear and other radioactive materials, and to prevent their illicit possession, transfer or use by terrorist groups.<sup>4</sup> The process initially focused on efforts to remove, consolidate and physically protect civilian fissile material. However, the agenda was subsequently expanded to include radiological sources, nuclear safety concerns relevant to nuclear security, and international governance issues. This led states and international organizations to undertake a wide range of voluntary commitments to improve nuclear security standards and practices at national level and to work through multilateral mechanisms to strengthen nuclear security worldwide.<sup>5</sup>

<sup>1</sup> Nuclear Security Summit, Washington 2016, 'Participating country and international organization delegations', 29 Mar. 2016.

<sup>2</sup> In a speech in Prague, Czech Republic, in Apr. 2009 US President Barack Obama identified nuclear terrorism as 'the most immediate and extreme threat to global security' and called for holding a global summit on nuclear security in 2010 as part of an effort to 'secure all vulnerable nuclear material around the world within four years'. White House, Office of the Press Secretary, Remarks by President Barack Obama, Hradčany Square, Prague, Czech Republic, 5 Apr. 2009.

<sup>3</sup> Arms Control Association, 'The Nuclear Security Summits', Fact sheet, updated Mar. 2016.

<sup>4</sup> The IAEA defines 'nuclear security' as 'the prevention and detection of, and response to, theft, sabotage, unauthorized access, illegal transfer or other malicious acts involving nuclear material, other radioactive substances or their associated facilities'. IAEA, 'Concepts and terms: meaning of "(nuclear) security"', updated 31 May 2016. In addition to terrorism, this definition addresses threats posed by criminal and non-terrorist political acts.

<sup>5</sup> For a summary of the commitments made by states and international organizations as part of the nuclear security summit meetings see Cann, M., Davenport, K. and Parker, J., *The Nuclear Security Summit: Accomplishments of the Process* (Arms Control Association/Partnership for Global Security: Washington, DC, Mar. 2016).

**Table 12.2.** Summary of international conventions, instruments and initiatives related to nuclear security

Name	Year signed/ established	No. of parties	Description
Convention on the Physical Protection of Nuclear Material (CPPNM) <sup>a</sup>	1979	153	Requires states to provide appropriate level of physical protection of nuclear material during international transport
Global Partnership against the Spread of Weapons and Materials of Mass Destruction	2002	29 <sup>b</sup>	Funds and coordinates activities for countering risks of chemical, biological radiological and nuclear terrorism
Proliferation Security Initiative (PSI)	2003	107	Coordinates voluntary actions by states to stop proliferation-related trafficking of weapons of mass destruction, their delivery systems and related material
UN Security Council Resolution 1540	2004	193 <sup>c</sup>	Requires states to establish domestic controls and regulations to prevent the illicit trafficking of nuclear material
International Convention on the Suppression of Acts of Nuclear Terrorism (ICSANT)	2005	106	Promotes cooperation to prevent the possession and use of radioactive material or devices, and use or damage of nuclear facilities, for terrorist acts
Global Initiative to Combat Nuclear Terrorism (GICNT)	2006	86	Conducts multilateral nuclear security activities for preventing, detecting and responding to nuclear terrorism

<sup>a</sup> The CPPNM is legally binding. An amendment adopted in 2005 requires states parties to establish and maintain appropriate physical protection for civilian nuclear material and facilities in domestic use, storage and transport. The amendment entered into force in May 2016 and the agreement was subsequently renamed the Convention on the Physical Protection of Nuclear Material and Nuclear Facilities.

<sup>b</sup> The Global Partnership was originally established by the Group of Eight (G8) countries: Canada, France, Germany, Italy, Japan, Russia, the United Kingdom and the United States.

<sup>c</sup> The Resolution was adopted unanimously by the United Nations Security Council and is legally binding on all UN member states.

Sources: United Nations Treaty Series, <<https://treaties.un.org/>>; and Nuclear Threat Initiative, <<http://www.nti.org/>>.

These commitments were based on five priority tasks: (a) reducing civilian stocks of fissile materials—highly enriched uranium (HEU) and plutonium—and minimizing the role of HEU in the civilian fuel cycle; (b) strengthening the physical protection of nuclear materials and related facilities; (c) enhancing capabilities to deter, detect and respond to the illicit trafficking of nuclear and other radioactive materials; (d) building nuclear security capacity through education and training initiatives; and (e) promoting participation in relevant international instruments and initiatives (see table 12.2).<sup>6</sup> These tasks reflect a comprehensive approach to combating nuclear terrorism

<sup>6</sup> Cann, Davenport and Parker (note 5); and Nuclear Security Summit, Washington 2016, 'History', [n.d.].

that goes beyond a narrow focus on ‘guns, guards and gates’: it prioritizes the development and continuous improvement of rigorous nuclear security standards and practices in order to address evolving terrorism threats.<sup>7</sup>

#### *Washington summit meeting activities*

The 2016 Washington Nuclear Security Summit meeting programme was similar to those of preceding summit meetings. The main elements consisted of reports reviewing the implementation progress of previous nuclear security commitments, national and joint statements setting out new voluntary undertakings and action plans, and a final communiqué adopted by consensus. An official side event—a Nuclear Industry Summit meeting—brought together global business and industry leaders to discuss current and emerging security challenges for the nuclear industry.<sup>8</sup>

The 2016 Washington summit meeting did not include the participation of all the states that took part in the previous summit meeting in The Hague in 2014. Russia declined to attend on the grounds that the summit process lacked democratic accountability. Specifically, Russia complained that small groups of states, with the support of the states hosting the summit meetings, had used the meetings to develop guidelines and standards that international organizations and initiatives, with much broader memberships, were then expected to follow.<sup>9</sup> More generally, Russia’s policy reversal occurred against a background of deteriorating relations with the USA. Some observers described Russia’s absence as a missed opportunity to build momentum behind the strategic goal of developing a sustainable global nuclear security system beyond 2016.<sup>10</sup>

Prior to the opening of the 2016 Washington summit meeting participating states and organizations issued individual reports on their progress in implementing national and multilateral nuclear security commitments since the 2014 summit meeting. These included steps taken by 17 states to remove or dispose of nuclear materials and to minimize the use of HEU. A total of 15 states reported physical protection upgrades for nuclear materials and radiological sources, including the acquisition of security and detection equipment. Over 30 states had updated national laws, regulations or struc-

<sup>7</sup> For a history of nuclear terrorism concerns and responses, see Bunn, M. et al., *Preventing Nuclear Terrorism: Continuous Improvement or Dangerous Decline?*, Project on Managing the Atom, Belfer Center for Science and International Affairs (Harvard University: Cambridge, MA, 21 Mar. 2016).

<sup>8</sup> Nuclear Security Summit, Washington 2016, ‘Nuclear industry summit 2016’, <<http://nis2016.org/>>.

<sup>9</sup> Russian Ministry of Foreign Affairs, ‘Comment by the Information and Press Department on US media reports that Russia does not intend to take part in preparations for the 2016 Nuclear Security Summit’, 5 Nov. 2014.

<sup>10</sup> Smith, D., ‘Russia’s absence means nuclear summit likely to end in anticlimax for Obama’, *The Guardian*, 31 Mar. 2016; and ‘Russia isolating itself refusing to participate in Nuclear Security Summit’, Sputnik, 30 Mar. 2016.

tures relating to nuclear security. A total of 12 states reported that they had joined or launched new international structures to support nuclear security cooperation, while 16 states had ratified nuclear security agreements or taken steps to implement them (see table 12.2). In addition, more than 40 states had engaged in capacity-building initiatives aimed at promoting a robust nuclear security culture through, among other means, expanded nuclear security training and education networks and Centres of Excellence.<sup>11</sup>

These commitments contributed to incremental but important progress being made towards achieving key nuclear security goals. In particular, in the period leading up to the 2016 Washington summit meeting, HEU and plutonium had been removed from more than 50 facilities in 30 states—in total, enough material for over 150 nuclear weapons.<sup>12</sup> Further progress was also made in reducing the number of facilities using HEU for civilian purposes. This included the shutdown or successful conversion to low enriched uranium (LEU) fuel use of 24 HEU research reactors and isotope production facilities in 15 states.<sup>13</sup> As of September 2016 HEU had been completely removed from 32 states.<sup>14</sup>

#### *Gift baskets and joint statements*

The 2016 Washington summit meeting continued the practice begun at the 2012 summit of groups of states and organizations presenting voluntary commitments, called ‘gift baskets’, which supplemented the statements and commitments adopted by consensus in the summit meeting communiqué.<sup>15</sup> The gift baskets reflect an approach to multilateral diplomacy through which groups of like-minded states can cooperate on specific issues of mutual concern without the need for the agreement of all participants.

A total of 18 gift baskets were introduced at the 2016 meeting covering a range of technical, legal and regulatory objectives. These included pledges to take steps to minimize and eventually eliminate civilian uses of HEU, mitigate ‘insider threats’ at nuclear facilities and storage sites, and improve transport security of nuclear materials.<sup>16</sup> A group of 29 states presented a gift basket in which they pledged to ensure adequate cybersecurity of industrial control and plant systems at nuclear facilities.<sup>17</sup> In recent years the dangers

<sup>11</sup> Nuclear Security Summit, Washington 2016, ‘Highlights of national progress reports’, 5 Apr. 2016.

<sup>12</sup> White House, Office of the Press Secretary, ‘The Nuclear Security Summits: securing the world from nuclear terrorism’, Fact sheet, 29 Mar. 2016.

<sup>13</sup> Nuclear Security Summit, ‘History’ (note 6).

<sup>14</sup> US Department of Energy, ‘Secretary Moniz announces removal of all highly enriched uranium from Poland’, 26 Sep. 2016.

<sup>15</sup> Goren, N., ‘House gifts, gift baskets, and the gift of nuclear security after 2016’, *Bulletin of the Atomic Scientists*, 25 Mar. 2016.

<sup>16</sup> Nuclear Security Summit, Washington 2016, ‘2016 gift baskets’, 5 Apr. 2016.

<sup>17</sup> Nuclear Security Summit, Washington 2016, ‘Joint statement on cyber security’, 5 Apr. 2016.

posed by cyber threats to nuclear security have gained increased attention worldwide.<sup>18</sup>

At the 2016 Washington summit meeting several gift baskets presented at previous meetings gained new subscribers. Most notably, China and India joined the 2014 Joint Statement on Strengthening Nuclear Security Implementation (SNSI) that had been sponsored by 35 states at the 2014 summit meeting.<sup>19</sup> The SNSI, which is considered to be one of the major achievements of the summit meeting process, commits states to subscribe to the IAEA's Fundamentals of Nuclear Security and to 'meet the intent' of the principles and recommendations contained in the IAEA Nuclear Security Series and Code of Conduct. It also commits states to accept periodic peer reviews and to ensure that management and personnel with responsibility for nuclear security are 'demonstrably competent'.<sup>20</sup> In 2014, at the request of the Netherlands and 35 co-sponsoring states, the IAEA circulated the SNSI as an Information Circular (INFCIRC/869) to which all IAEA member states could subscribe regardless of whether they participated in the summit meeting.<sup>21</sup>

A new gift basket endorsed by 28 states at the 2016 meeting built on a 2014 gift basket aimed at securing highest-risk radioactive sources and managing their disposition.<sup>22</sup> The 2016 gift baskets also contained a commitment by states to pursue alternative technologies to replace high-activity sealed radioactive sources (HASS) used for medical, research and industrial purposes.<sup>23</sup> There has been concern over the potential misuse of these sources for criminal or terrorist acts since they are included in the category of radioactive sources (Category 1) defined by the IAEA to be the most dangerous to human health.<sup>24</sup>

The 2016 Washington summit meeting also saw the announcement of nine joint statements on practical measures to strengthen the nuclear non-pro-

<sup>18</sup> Nuclear Threat Initiative, 'Addressing cyber-nuclear security threats', [n.d.]; and Khanijo, R., 'Nuclear security summit: the challenge continues', United Service Institution of India (USI), USI Occasional Paper, no. 1 (2016), p. 7.

<sup>19</sup> White House, Office of the Press Secretary, 'Update on joint statement on strengthening nuclear security implementation (INFCIRC 869)', Fact sheet, 6 Apr. 2016.

<sup>20</sup> Nuclear Security Summit, The Hague 2014, 'Joint statement on strengthening nuclear security implementation', 25 Mar. 2014.

<sup>21</sup> IAEA, Communication received from the Netherlands concerning the strengthening of nuclear security implementation, INFCIRC/869, 22 Oct. 2014.

<sup>22</sup> Nuclear Security Summit, The Hague 2014, 'Statement on enhancing radiological security', 24 Mar. 2014.

<sup>23</sup> Nuclear Security Summit, Washington 2016, 'Joint statement on the security of high activity radioactive sources', 5 Apr. 2016.

<sup>24</sup> The IAEA ranks radioactive sources in terms of their potential to cause harm to human health according to 5 categories. Category 1 sources are considered to be the most dangerous because they can pose a very high risk to human health if not managed safely and securely. IAEA, *Categorization of Radioactive Sources*, IAEA Safety Standards Series no. RS-G-1.9 (IAEA: Vienna, 2005), p. 5.

liferation regime and enhance nuclear security.<sup>25</sup> These set out bilateral and multilateral commitments to improve cooperation on a range of issues including (a) the removal and disposition of HEU reactor fuel; (b) expanded training and capacity-building programmes; (c) enhanced support for legal instruments and initiatives to combat nuclear terrorism; and (d) the promotion of the use of nuclear forensics to investigate and prosecute the illicit trafficking of nuclear materials.<sup>26</sup> Unlike the gift baskets, the joint statements contained commitments that were not intended for other participating states and organizations to join or endorse.

*Sustaining nuclear security after the summit meetings*

Obama described the 2016 Washington summit meeting as a ‘transition summit’.<sup>27</sup> One of the main objectives of the meeting was to find ways to sustain the political momentum created by previous summit meetings in order to support the work of states and international organizations to strengthen the global nuclear security system beyond 2016. In support of this objective, 40 states presented a gift basket that established a Nuclear Security Contact Group to carry forward the consultative element of the summit meeting process.<sup>28</sup> The new group will build on the network of ‘Sherpas’—the senior expert officials in each summit country responsible for developing the outcomes of the summit meetings and for preparing their respective government leaders. The Nuclear Security Contact Group will convene annually on the margins of the IAEA General Conference to coordinate efforts to implement commitments made in the four summit communiqués, national statements, gift baskets and action plans, as well as identify emerging trends that may require more focused attention. The group is also tasked with developing and maintaining links with non-governmental organizations and the nuclear industry.<sup>29</sup>

In another step, the 2016 Washington summit meeting communiqué approved new action plans for each of the five main international organizations and institutions currently working to secure vulnerable nuclear and other radioactive materials through various means.<sup>30</sup> These are the UN, the IAEA, Interpol, the Global Initiative to Combat Nuclear Terrorism (GICNT)

<sup>25</sup> Nuclear Security Summit, Washington 2016, ‘2016 joint statements’, 1 Apr. 2016.

<sup>26</sup> For a summary of the joint commitments made during the summit meetings see Tobey, W., ‘Peering down from the summit: the path to nuclear security 2010–2016 and beyond’, *Global Summity: Politics, Economics, and Law in International Governance*, 1 Oct. 2016, Appendix 2.

<sup>27</sup> Jenkins, B., ‘The 2016 Nuclear Security Summit: a point of transition’, Nuclear Security Summit, Washington 2016, ‘Statements and speeches’, 10 Mar. 2016.

<sup>28</sup> Nuclear Security Summit, Washington 2016, ‘Joint statement on sustaining action to strengthen global nuclear security architecture’, 5 Apr. 2016.

<sup>29</sup> IAEA, Communication dated 24 October 2016 received from the Permanent Mission of Canada concerning the Statement of Principles of the Nuclear Security Contact Group, INFCIRC/899, 2 Nov. 2016. The Nuclear Security Contact Group held its first annual meeting in Vienna on 23 Sep. 2016.

<sup>30</sup> Nuclear Security Summit, Washington 2016, ‘2016 action plans’, 1 Apr. 2016.

and the Global Partnership Against the Spread of Weapons of Mass Destruction. Taken together, the action plans contain 137 commitments to specific steps and measures. According to the communiqué, these will be implemented on a voluntary basis and are intended to ‘ensure political momentum and to continuously strengthen nuclear security at national, regional, and global levels’.<sup>31</sup>

Outside of the nuclear security summit process, the IAEA committed to organize international nuclear security conferences every three years—this follows an initial meeting held in 2013.<sup>32</sup> The conferences will be held at ministerial level, making them the highest-level regular dialogue focused on nuclear security and thereby a potentially important forum for directing political attention on specific legal, regulatory and technical measures.<sup>33</sup> The second meeting took place on 5–9 December 2016 and brought together participants from governments, regulatory bodies, international organizations and industry to review progress made in strengthening nuclear security worldwide and discuss a range of issues grouped according to six broad themes. The meeting’s results will serve as a basis for preparing the IAEA’s next Nuclear Security Plan, which will cover the period 2018–21.<sup>34</sup>

These initiatives have become increasingly important in the light of indications that progress in implementing national and multilateral nuclear security commitments has slowed. According to one biennial global nuclear security index, no improvements had been made since 2014 in the core protection and control measures assessed by the index, including on-site physical protection, control and accounting, insider threat prevention, physical security during transport or response capabilities.<sup>35</sup> The slowdown was not entirely unexpected insofar as it was a result of the tendency of summit leaders to focus on making commitments that could rapidly produce tangible results. However, in the view of some observers it highlighted the need for governments to continue to provide adequate political and financial support for turning ambitious summit meeting commitments and action plans into concrete achievements.<sup>36</sup>

<sup>31</sup> Nuclear Security Summit, Washington 2016, ‘Nuclear Security Summit 2016 communiqué’, 1 Apr. 2016, p. 2.

<sup>32</sup> IAEA, International Conference on Nuclear Security: Commitments and Actions, Vienna, 5–9 Dec. 2016, ‘Announcement and call for papers’, CN-244, [n.d.].

<sup>33</sup> Tobey (note 26), p. 14; and Cann, Davenport and Parker (note 5), p. 6.

<sup>34</sup> IAEA, International Conference on Nuclear Security: Commitments and Actions, Vienna, 5–9 Dec. 2016, Ministerial Declaration, 5 Dec. 2016.

<sup>35</sup> Nuclear Threat Initiative (NTI), *NTI Nuclear Security Index: Theft and Sabotage: Building a Framework for Assurance, Accountability and Action*, 3rd edn (NTI: Washington, DC, Jan. 2016), p. 7.

<sup>36</sup> Tobey (note 26), pp. 6–7; and Malin, M. and Roth, N., ‘A new era for nuclear security’, *Arms Control Today*, June 2016.

*Summit achievements and future tasks*

The main achievement of the Nuclear Security Summit meeting process has been to increase the political salience of nuclear security as a means for combating nuclear terrorism. The process has provided a forum for mobilizing high-level political support for implementing existing programmes and measures—often technical in nature—aimed at strengthening nuclear security. It has also focused political attention on the need to address weaknesses and functional gaps in the current nuclear security architecture in order to prevent them from being exploited for criminal or other illicit purposes. In doing so, the summit meetings set the stage for future action that, if supported by the requisite political will, could lead to a more harmonized and comprehensive nuclear security system.

However, the development of an effective regime covering all nuclear and radiological materials and associated facilities remains a formidable long-term challenge. One critical shortcoming is that international regulations, standards and practices for the control, protection and oversight of weapon-usable nuclear material apply solely to material in civilian use; they do not apply to material in military use, which accounts for by far the largest proportion of global stocks.<sup>37</sup> By one estimate, only 17 per cent of the approximately 500 tonnes of plutonium and 1300 tonnes of HEU in global inventories are in civilian use; the rest is military material held in a variety of forms by the nuclear weapon-possessing states.<sup>38</sup>

The application of consistent and transparent material protection, control and accounting arrangements to all weapon-usable nuclear materials has attracted growing interest from non-governmental experts and disarmament advocates.<sup>39</sup> However, the nuclear weapon-possessing states have consistently resisted calls for broadening the scope of existing mechanisms and practices to apply to the physical protection of military nuclear materials and associated facilities. As a result, there are no specific standards or guidelines advising how military material should be secured.<sup>40</sup> There is also

<sup>37</sup> Nuclear Threat Initiative (NTI), Military Materials Security Study Group, *Bridging the Military Nuclear Materials Gap* (NTI: Washington, DC, Nov. 2015). The following countries have military nuclear materials: China, France, India, Israel, the Democratic People's Republic of Korea (DPRK, North Korea), Pakistan, Russia, the United Kingdom and the United States.

<sup>38</sup> International Panel on Fissile Materials (IPFM), *Global Fissile Material Report 2013: Increasing Transparency of Nuclear Warhead and Fissile Material Stocks as a Step toward Disarmament* (IPFM: Princeton, NJ, 2013), in Nuclear Threat Initiative (note 37), p. 9.

<sup>39</sup> Nuclear Threat Initiative (note 37). On options to extend international oversight to military nuclear material see Fitzpatrick, M. et al., *Improving the Security of All Nuclear Materials: Legal, Political, and Institutional Options to Advance International Oversight*, Report by the International Institute for Strategic Studies (IISS), the James Martin Center for Nonproliferation Studies (CNS) and the Vienna Center for Disarmament and Non-Proliferation (VCDNP) (IIS/CNS/VCDNP: Sep. 2016).

<sup>40</sup> Although UN Security Council Resolution 1540 requires countries to apply effective physical protection for all nuclear materials, including those in nuclear weapons, it does not provide specific



little public knowledge about the state of security of such materials in many countries with military nuclear programmes. It was with these lacunae in mind that the 2016 Washington summit meeting communiqué explicitly reaffirmed that states had a fundamental responsibility ‘to maintain at all times effective security of all nuclear and other radioactive material, including nuclear materials used in nuclear weapons’.<sup>41</sup>

### **The entry into force of the Amendment to the Convention on the Physical Protection of Nuclear Material**

During 2016 a milestone was reached in international legal efforts to strengthen the security of civilian nuclear facilities and materials worldwide. On 8 May 2016 the 2005 Amendment to the 1979 Convention on the Physical Protection of Nuclear Material (CPPNM) entered into force with the ratification of the amendment by two-thirds of its states parties—an achievement that had been a priority goal for the Nuclear Security Summit meetings.<sup>42</sup> With the amendment’s entry into force, the convention was formally renamed the Convention on the Physical Protection of Nuclear Material and Nuclear Facilities.

The amendment makes it legally binding for states to establish, implement and maintain an ‘appropriate’ physical protection regime for civilian nuclear material and nuclear facilities in peaceful domestic use, storage and transport. The original CPPNM provisions applied only to the physical protection of nuclear material during international transport. The amendment also provides for expanded cooperation regarding measures to locate and recover stolen or smuggled nuclear material and to mitigate any radiological consequences of sabotage. In addition, it requires the parties to convene at least one review conference within five years of its entry into force.<sup>43</sup>

The amended CPPNM remains the only internationally legally binding instrument for the physical protection of nuclear materials and facilities in the civilian nuclear fuel cycle.<sup>44</sup> However, while the CPPNM establishes general security principles, it lacks specific standards or guidelines mandating how states should develop or enhance, implement and maintain a physi-

guidelines for implementing this obligation.

<sup>41</sup> Nuclear Security Summit, ‘Nuclear Security Summit 2016 communiqué’ (note 31).

<sup>42</sup> On 8 Apr. 2016 Nicaragua became the 102nd of the 153 states parties to ratify the 2005 Amendment, thereby achieving the required adherence by two-thirds of the convention parties. Wetherall, A. and Fournier, V., ‘Key nuclear security agreement to enter into force on 8 May’, IAEA, Office of Public Information and Communication, 9 Apr. 2016.

<sup>43</sup> IAEA, Amendment to the Convention on the Physical Protection of Nuclear Material, INF-CIRC/274/Rev.1/Mod.1, 9 May 2016.

<sup>44</sup> The CPPNM does not apply to radioactive sources and associated facilities which are covered by IAEA guidelines and recommendations based on the voluntary Code of Conduct on the Safety and Security of Radioactive Sources. IAEA, *Code of Conduct on the Safety and Security of Radioactive Sources* (IAEA: Vienna, Jan. 2004).

cal protection regime for nuclear materials and facilities. In the light of this gap, the establishment of internationally binding principles and measures to ensure the highest possible levels of physical protection would be an important step forward for strengthening nuclear security worldwide.<sup>45</sup>

<sup>45</sup> Rauf, T., 'The entry into force of the Amendment to Convention on the Physical Protection of Nuclear Material', SIPRI Commentary, 8 May 2016.