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# INTERNATIONAL ATOMIC ENERGY AGENCY BACKGROUND GUIDE 2016

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# NATIONAL MODEL UNITED NATIONS



# THE 2016 NATIONAL MODEL UNITED NATIONS

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Dear Delegates,

Welcome to the 2016 National Model United Nations Conference in Washington, DC (NMUN•DC)! We are pleased to introduce you to our committee, the International Atomic Energy Agency (IAEA). This year's staff is: Director Leah Schmidt and Assistant Director Analeigh Willett. Leah is currently on a Killam Fellowship at American University, but originally hails from Calgary, Alberta, Canada. She specializes in human security, with a thesis focus on genocide studies and women's rights. This is her fourth year with NMUN and she looks forward to productive consensus-building in the committee. Ana is working on her triple B.A. in International Relations, Political Science, and Spanish with a focus in translations from West Virginia University and is planning on attending the University of Amsterdam for her Masters in International Political Economy, focusing in globalization and development. This is her second year with NMUN and she looks forward to the work the IAEA will put forward.

The topics under discussion for the IAEA are:

- I. Radioactive Waste Management
- II. Promoting Nuclear Safety and Security

The IAEA is a key organization within the UN system, and serves as the world's center for nuclear cooperation through the promotion of safe, secure, and peaceful use of nuclear technology. As an autonomous organization reporting to both the General Assembly and the Security Council, the IAEA sets global best practices on research, the peaceful use of nuclear technology, safety standards, and provides international safeguards against the risks that radiation presents. In order to accurately replicate the work of the IAEA, it will be critical that delegates understand the three roles of the IAEA in setting international safety standards, acting as a hub for scientific and technological research, and inspecting nuclear facilities to ensure safety.

We hope you will find this Background Guide useful as an introduction to the topics for this committee. However, it is not intended to replace individual research. We highly encourage you to explore your Member State's policies in-depth, as well as use the Annotated Bibliography and Bibliography to further your knowledge on these topics. In preparation for the conference, each delegation will submit a [position paper](#). Please take note of the [NMUN policies](#) on the website and in the [Delegate Preparation Guide](#) regarding plagiarism, codes of conduct, dress code, sexual harassment, and the awards philosophy and evaluation method. Adherence to these guidelines is mandatory.

The [NMUN Rules of Procedure](#) are available to download from the NMUN website. This document includes the long and short form of the rules, as well as an explanatory narrative and example script of the flow of procedure. It is thus an essential instrument in preparing for the conference, and a reference during committee.

If you have any questions concerning your preparation for the committee or the conference itself, feel free to contact the Under-Secretary-General for the committee, Katrena Porter, or the Secretary-General for the conference, Lauren Shaw. You can reach either staff member by contacting them at: [usgkat.dc@nmun.org](mailto:usgkat.dc@nmun.org) or [secgen.dc@nmun.org](mailto:secgen.dc@nmun.org).

We wish you all the best in your preparations and look forward to seeing you at the conference!

Sincerely,

Leah Schmidt, Director  
Analeigh Willett, Assistant Director

## Committee Overview

*We... seek more than the mere reduction or elimination of atomic materials for military purposes. It is not enough to take this weapon out of the hands of the soldiers. It must be put into the hands of those who will know how to strip its military casing and adapt it to the arts of peace.*<sup>1</sup>

### Introduction

United States President Dwight Eisenhower first formally proposed the International Atomic Energy Agency (IAEA) in his “Atoms for Peace” speech to the United Nations (UN) General Assembly (GA) in 1953.<sup>2</sup> The Conference on the Statute of the IAEA approved the final *Statute* on 23 October 1956, and it came into force, officially creating the Agency, on 29 July 1957.<sup>3</sup> The growing consensus regarding nuclear disarmament continued with the adoption of the *Treaty on the Non-Proliferation of Nuclear Weapons* (NPT) by the GA in 1968 and the NPT’s entry into force on 5 March 1970.<sup>4</sup> The IAEA is the primary organization charged with verifying treaty compliance and carrying out the NPT’s aims of non-proliferation, disarmament, and promoting the use of nuclear technology.<sup>5</sup> Today, the Agency’s responsibilities are both normative and functional: the General Conference and the Board of Governors provide a forum for debate on nuclear issues, while the Secretariat carries out inspections, develops safety standards, and assists Member States in utilizing nuclear technology.<sup>6</sup>

### Governance, Structure and Membership

The IAEA consists of the Board of Governors, the General Conference, and the Secretariat.<sup>7</sup> The Board of Governors meets five times per year to make recommendations regarding the IAEA’s budget, program of work, safeguards agreements and safety standards, and applications for membership.<sup>8</sup> The General Conference meets annually to consider and approve topics brought to it by the Board of Governors, the Director General, and Member States.<sup>9</sup> The General Conference consists of all IAEA Member States, with each state having one vote.<sup>10</sup> The Board of Governors consists of 35 Member States.<sup>11</sup> The outgoing Board allocates 10 of the seats to the members most advanced in atomic energy; additionally, the state most advanced in atomic energy from eight geographic areas is appointed if the area is not represented among the initial appointees.<sup>12</sup> The General Conference elects 22 states to the Board, maintaining equitable geographic distribution.<sup>13</sup>

The Secretariat is headed by the Director General and includes four offices and six departments that carry out the day-to-day work of the Agency.<sup>14</sup> The Secretariat, including the Director General, acts under the direction and guidance of the Board of Governors.<sup>15</sup> The Director General’s Office for Coordination, the Office of Internal Oversight Services, the Office of Legal Affairs, and the Office of Public Information and Communication provide administrative functions and support to the remainder of the Secretariat.<sup>16</sup> The Departments of Management, Nuclear Energy, Nuclear Safety and Security, Nuclear Sciences and Applications, Safeguards, and Technical

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<sup>1</sup> UN General Assembly, *Official Record (A/PV.470)*, 1953, p. 452.

<sup>2</sup> Fischer, *History of the International Atomic Energy Agency: The First Forty Years*, 1997, p. 1.

<sup>3</sup> IAEA, *About the Statute of the IAEA*.

<sup>4</sup> IAEA, *Treaty on the Non-Proliferation of Nuclear Weapons*, 2014.

<sup>5</sup> IAEA, *The IAEA Mission Statement*, 2014; UN General Assembly, *Treaty on the Non-Proliferation of Nuclear Weapons (A/RES/2373 (XXII))*, 1968.

<sup>6</sup> IAEA, *General Conference*, 2016; IAEA, *Board of Governors*, 2016; IAEA, *Secretariat*, 2016.

<sup>7</sup> *Ibid.*

<sup>8</sup> IAEA, *Board of Governors*, 2016.

<sup>9</sup> IAEA, *General Conference*, 2016.

<sup>10</sup> *Ibid.*

<sup>11</sup> IAEA, *Board of Governors*, 2016.

<sup>12</sup> UN Conference on the Statute of the IAEA, *The Statute of the IAEA*, 1956, Art. VI.

<sup>13</sup> *Ibid.*

<sup>14</sup> IAEA, *Organizational Chart*, 2013; IAEA, *Secretariat*, 2016.

<sup>15</sup> IAEA Board of Governors, *Provisional Rules of Procedure of the Board of Governors (GOV/INF/500/Rev. 1)*, 1989.

<sup>16</sup> IAEA, *Offices Reporting to the Director General*, 2014.

Cooperation carry out the IAEA's work in promoting disarmament, non-proliferation, and peaceful use of nuclear technology.<sup>17</sup>

The IAEA is an independent, autonomous, self-governing body.<sup>18</sup> The Agency's relationship with the UN is established in the *Agreement Governing the Relationship Between the United Nations and the International Atomic Energy Agency*, which defines the formal working and reporting processes of the two organizations.<sup>19</sup> Any formal relationships between the IAEA and other international bodies are established by similar agreements, as called for in Article XVI of the IAEA Statute.<sup>20</sup> Its budget is initially drafted by the Director General and submitted to the Board of Governors for approval.<sup>21</sup> Once approved by the Board, the budget is considered by the General Conference, which can either approve the budget or return it to the Board with recommendations for revision.<sup>22</sup> The IAEA is funded by contributions from its Member States, assessed by a scale determined by the General Conference based on gross domestic product, as well as charges to states receiving materials, services, equipment, or facilities from the Agency and voluntary contributions to the general fund.<sup>23</sup> The IAEA budget for 2016 is €361 million.<sup>24</sup>

The IAEA currently has 168 Member States, with three of those states in the process of depositing the "necessary legal instruments" for membership.<sup>25</sup> The only former Member State is the Democratic People's Republic of Korea (DPRK), which joined the Agency in 1974 and withdrew in 1994.<sup>26</sup> The process of joining the IAEA is defined in Article IV of the Agency's statute.<sup>27</sup> The original Member States of the IAEA were those that signed the statute within 90 days of it opening for signature.<sup>28</sup> Additional states wishing to join the Agency submit an application to the Secretariat for review by the Board of Governors.<sup>29</sup> If the Board determines the applicant "is willing and able to carry out the obligations of membership," it recommends membership to the General Conference, which confers final approval.<sup>30</sup> Once approved, the applicant deposits an Instrument of Acceptance of the IAEA Statute to the United States Department of State, upon which the state is a member.<sup>31</sup> Although the IAEA is closely tied to the NPT, the Agency's list of Member States is not identical to the list of the States Parties to the treaty.<sup>32</sup> Notably, India, Israel, and Pakistan were among the Agency's initial members in 1957 but have never signed or ratified the NPT.<sup>33</sup> The participation of these states in the IAEA can be seen as the Agency's ability to influence nuclear policy beyond the scope of the NPT.<sup>34</sup> In addition to these states, 20 additional States Parties to the NPT have never joined the IAEA.<sup>35</sup>

### ***Mandate, Functions and Powers***

The IAEA's mandate is established by its statute, which states that it "shall seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. It shall ensure, so far as it is able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose."<sup>36</sup> The mandate is further defined by the NPT, which establishes international law

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<sup>17</sup> IAEA, *Organizational Chart*, 2013.

<sup>18</sup> IAEA, *The IAEA Mission Statement*, 2014.

<sup>19</sup> IAEA, *The Texts of the Agency's Agreements with the United Nations (INFCIRC/11)*, 1959.

<sup>20</sup> UN Conference on the Statute of the IAEA, *The Statute of the IAEA*, 1956, Art. XVI.

<sup>21</sup> *Ibid.*, Art. XIV.

<sup>22</sup> *Ibid.*

<sup>23</sup> *Ibid.*

<sup>24</sup> IAEA, *IAEA Regular Budget for 2016*, 2015.

<sup>25</sup> IAEA, *Member States*, 2016.

<sup>26</sup> *Ibid.*

<sup>27</sup> UN Conference on the Statute of the IAEA, *The Statute of the IAEA*, 1956, Art. IV.

<sup>28</sup> *Ibid.*

<sup>29</sup> IAEA, *Becoming a Member*, 2014.

<sup>30</sup> *Ibid.*

<sup>31</sup> *Ibid.*

<sup>32</sup> IAEA, *Member States*, 2016; UNODA, *Treaty on the Non-Proliferation of Nuclear Weapons: Status of the Treaty*, 2016.

<sup>33</sup> *Ibid.*

<sup>34</sup> Miller & Scheinman, *India, Israel, and Pakistan: Engaging the Non-NPT States in the Nonproliferation Regime*, 2003.

<sup>35</sup> IAEA, *Member States*, 2016; UNODA, *Treaty on the Non-Proliferation of Nuclear Weapons: Status of the Treaty*, 2016.

<sup>36</sup> UN Conference on the Statute of the IAEA, *The Statute of the IAEA*, 1956, Art. II.

regarding the non-proliferation of nuclear weapons, the disarmament of existing weapons systems, and the promotion of peaceful nuclear technology.<sup>37</sup> Although an autonomous body that is separate from the UN, the *Statute* establishes the IAEA's reporting to UN bodies, including annual reports to the General Assembly, reports to the Security Council as needed, and reports to other organs regarding matters within the "competence" of those bodies.<sup>38</sup>

The IAEA's most visible and long-standing function is the role it plays in evaluating compliance with the NPT.<sup>39</sup> Article III of the NPT requires States Parties not in possession of nuclear weapons to establish a safeguards agreement with the IAEA.<sup>40</sup> In addition to establishing common safety standards for fissile material, the safeguards agreements allow the Agency to verify that states comply with the NPT through activities like field inspections, analysis of satellite images and environmental samples, and review of nuclear material accountancy entries.<sup>41</sup> The Agency can also refer matters to the UN Security Council, such as the Iranian nuclear program in 2006 and an undeclared reactor in Syria in 2011.<sup>42</sup> In addition to the NPT there are more than 15 treaties and conventions directly under the auspices of the IAEA, which establish responsibilities for and confer powers to the Agency.<sup>43</sup>

The Agency provides a number of key functions to the international community related to nuclear technology.<sup>44</sup> The IAEA is responsible for establishing and updating the nuclear safeguards system, which aims to prevent proliferation of weapons technology by early detection of any misuse of nuclear technology or fissile materials.<sup>45</sup> Safeguards agreements were applied in 180 Member States in 2014.<sup>46</sup> The IAEA provides technical assistance to its Member States wishing to utilize nuclear technology, including energy, radiation medicine, and agriculture.<sup>47</sup> In 2014 over 100 states and territories received technical assistance from the IAEA, with the largest areas of work being health and nutrition, safety and security, and food and agriculture.<sup>48</sup> Additionally, the Agency publishes research on topics like radiation biology, pest control, quality assurance, and radioactive waste management; providing a centralized forum for this research allows all states to benefit regardless of domestic research funding.<sup>49</sup>

### ***Recent Sessions and Current Priorities***

The 59<sup>th</sup> session of the IAEA General Conference was held in September 2015, with more than 3,000 delegates from Member States, non-governmental organizations, other international organizations, and the media in attendance.<sup>50</sup> The Conference adopted resolutions on the implementation of the Agency's safeguards agreement with the DPRK, the implementation of the 2014-2017 Nuclear Security Plan, and strengthening the IAEA's activities related to nuclear science and technology.<sup>51</sup> Side events included the presentation of the IAEA's report on the Fukushima Daiichi accident and a scientific forum on industrial applications of nuclear technology.<sup>52</sup> The Board of Governors most recently met in March 2016, with expansion of nuclear energy technology and the establishment of the Office of Safeguards Verification in Iran being major topics of discussion.<sup>53</sup> The Board also approved a four-year, €2.3

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<sup>37</sup> UN General Assembly, *Treaty on the Non-Proliferation of Nuclear Weapons (A/RES/2373 (XXII))*, 1968.

<sup>38</sup> UN Conference on the Statute of the IAEA, *The Statute of the IAEA*, 1956, Art. III.

<sup>39</sup> IAEA, *Treaty of the Non-Proliferation of Nuclear Weapons and the IAEA - A Chronology*, 2014; UN General Assembly, *Treaty on the Non-Proliferation of Nuclear Weapons (A/RES/2373 (XXII))*, 1968.

<sup>40</sup> UN General Assembly, *Treaty on the Non-Proliferation of Nuclear Weapons (A/RES/2373 (XXII))*, 1968, Art. III.

<sup>41</sup> IAEA, *Key Facts and Figures*, 2016.

<sup>42</sup> *UN Nuclear Watchdog Refers Syria to Security Council*, BBC News, 2011.

<sup>43</sup> IAEA, *Treaties Under IAEA Auspices*, 2016.

<sup>44</sup> IAEA, *The IAEA Mission Statement*, 2014.

<sup>45</sup> IAEA, *Basics of IAEA Safeguards*, 2016.

<sup>46</sup> IAEA Board of Governors, *Safeguards Statement for 2014 (GOV/2015/30)*, 2015.

<sup>47</sup> IAEA, *Technical Cooperation Report for 2014*, 2015, p. 6.

<sup>48</sup> *Ibid.*, p. 6.

<sup>49</sup> IAEA, *Scientific and Technical Publications Subject Areas*, 2010.

<sup>50</sup> IAEA Office of Public Information and Communication, *Key Resolutions Adopted as IAEA General Conference Draws to a Close*, 2015.

<sup>51</sup> *Ibid.*

<sup>52</sup> *Ibid.*

<sup>53</sup> IAEA Office of Public Information and Communication, *IAEA Director General Highlights 2016 Activities to Agency's Board*, 2016.

million initiative to combat the Zika virus in Latin America and the Caribbean, using the Agency's agricultural research on sterilization of insects to reduce the mosquito population.<sup>54</sup>

In addition to agricultural research, much of the Secretariat's recent work has focused on improving nuclear safety and security and on producing the Agency's annual reports, including the IAEA Annual Report, the Nuclear Technology Review, the Nuclear Safety Review, and the Safeguards Statement.<sup>55</sup> The Secretariat is also supporting Member States in the implementation of the Sustainable Development Goals by building states' technical capacity to utilize nuclear and isotopic technology to achieve the targets and track data, most notably the targets to end hunger, ensure access to water and sanitation, and promote sustainable industrialization.<sup>56</sup> Externally, the IAEA played a role in the 2015 NPT Review Conference, a gathering of the States Parties to the NPT held every five years to discuss treaty implementation and future policy.<sup>57</sup> In addition to providing technical expertise to the Review Conference, the IAEA hosted "How The Atom Benefits Life," a high-level event on the peaceful use of nuclear technology, as well as side events on nuclear security, nuclear safety, and safeguards.<sup>58</sup>

The Agency's current objectives are identified in the Medium Term Strategy for 2012-2017, which was developed by an open-ended working group established by the Board of Governors and with contributions by the Secretariat.<sup>59</sup> The document identifies six priorities for the IAEA: "facilitating access to nuclear power; strengthening promotion of nuclear science, technology, and applications; improving nuclear safety and security; providing effective technical cooperation; strengthening the effectiveness and improving the efficiency of the Agency's safeguards and other verification activities; and providing efficient, innovative management and strategic planning."<sup>60</sup> Additionally, the IAEA will continue its cooperation with other international organizations, notably with the UN GA and Security Council and in Preparatory Committee meetings for the 2020 NPT Review Conference.<sup>61</sup>

### **Conclusion**

The IAEA provides the foundation for maintaining nuclear safety and security through its technical cooperation and safeguards programs.<sup>62</sup> Additionally, its research promotes the peaceful use of nuclear technology in a number of areas, including medicine and diagnostic imaging, water isotope analysis to map hydrological systems, and isotope tracers to measure the nutritional value of food.<sup>63</sup> As the international community continues to pursue nuclear disarmament and the expanded use of peaceful nuclear technology, including energy, the IAEA will play a vital role in facilitating dialogue, coordinating research efforts, and providing technical cooperation to Member States.<sup>64</sup>

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<sup>54</sup> IAEA Office of Public Information and Communication, *IAEA Board of Governors Approves 2.3 Million Euro Project to Help Combat Zika*, 2016.

<sup>55</sup> IAEA, *Reports*, 2015.

<sup>56</sup> IAEA, *Atoms for Peace and Development: How the IAEA Supports the Sustainable Development Goals*.

<sup>57</sup> IAEA, *IAEA and NPT*, 2016; UN 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, *Background*.

<sup>58</sup> IAEA, *IAEA and NPT*, 2016.

<sup>59</sup> IAEA, *Medium Term Strategy*, 2014.

<sup>60</sup> IAEA, *Medium Term Strategy 2012-2017*, p. 1.

<sup>61</sup> IAEA, *Relationship with the United Nations*, 2016; IAEA, *NPT "PrepCom" Sessions*, 2014.

<sup>62</sup> IAEA, *Basics of IAEA Safeguards*, 2016.

<sup>63</sup> IAEA, *Division of Human Health*, 2016; IAEA, *Water Resources Programme: Our Role*, 2010; Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, *Livestock Frequently Asked Questions*, 2014.

<sup>64</sup> IAEA, *The IAEA Mission Statement*, 2014.

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*Fischer's experience as a negotiator during the writing of the IAEA statute, Director and Assistant Director General for IAEA External Relations, and Special Advisor to the IAEA Director General contributed to producing the definitive resource on the Agency's early years. Delegates can use this book to understand the conditions under which the Agency was founded, the negotiation of the statute, and the Agency's work and priorities. Understanding the Agency's historical context and work will be critical to successful negotiations at the conference.*

United Nations, Conference on the Statute of the International Atomic Energy Agency. (1956). *The Statute of the International Atomic Energy Agency*. Retrieved 18 April 2016 from: <https://www.iaea.org/node/9642>

*As the Agency's founding document, the statute establishes the IAEA's objectives, membership, governance, and program of work. Delegates should be thoroughly familiar with the provisions of the statute and how they are applied in the Agency's work. Particular attention should be given to Article III, which authorizes the key functions of the Agency, and Article XVI, which establishes the process by which the IAEA enters into agreements with other organizations, such as the UN.*

United Nations, General Assembly, Twenty-second session. (1968). *Treaty on the Non-Proliferation of Nuclear Weapons (A/RES/2373 (XXII))*. Retrieved 18 April 2016 from: [www.undocs.org/A/RES/2373 \(XXII\)](http://www.undocs.org/A/RES/2373_(XXII))

*Article III of the NPT requires States Parties to establish safeguards agreements with the IAEA, and the Agency's work is guided by the NPT's three pillars of disarmament, non-proliferation, and the peaceful uses of nuclear technology. In particular, the NPT's provisions to prevent the proliferation of nuclear weapons underpin the IAEA's work to establish and promote safeguards, and the call for the peaceful use of nuclear technology is the impetus for much of the Agency's research. Delegates should have a thorough understanding of the NPT and its implementation.*

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International Atomic Energy Agency. (2014). *The IAEA Mission Statement* [Website]. Retrieved 18 April 2016 from: <https://www.iaea.org/about/mission>

International Atomic Energy Agency. (2014). *Medium Term Strategy* [Website]. Retrieved 18 April 2016 from: <https://www.iaea.org/about/mts>

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## I. Radioactive Waste Management

*“Nuclear wastes are hazardous for tens of thousands of years... This clearly is unprecedented and poses a huge threat to our future generations.”<sup>65</sup>*

### **Introduction**

Radioactive waste is defined as waste that is “generated in the nuclear fuel cycle as well as in nuclear applications [such as science, medicine, and research].”<sup>66</sup> In the International Atomic Energy Agency’s (IAEA) 2003 Radioactive Waste Management Glossary, radioactive waste is defined more technically for legal and regulatory purposes as “waste that contains or is contaminated with radionuclides at concentrations or activities greater than clearance levels as established by the regulatory body.”<sup>67</sup> Radioactive waste comes from various sources, the most common being the operation of a nuclear reactor (primary waste) or as a byproduct from the processing of waste (secondary waste).<sup>68</sup> Radioactive waste “can have a direct impact on health and the environment through exposure to ionizing radiation” if managed improperly.<sup>69</sup> Proper disposal of radioactive waste is complicated due to the varied production methods of waste, the wide range in chemical and physical forms, and differing number of radionuclides found in the waste, in addition to the waste usually being thermally hot.<sup>70</sup> As a potentially hazardous byproduct of the existence of nuclear energy, radioactive waste management is a key tenant of the IAEA’s “Nuclear Safety & Security” pillar, and one of its central areas of work.<sup>71</sup>

### **International and Regional Framework**

While nuclear waste disposal is a key pillar of action under the IAEA, the United Nations (UN) has also established important documents related to this issue. Under the Security Council (SC), key documents have included resolution 1373 (2001), which noted that illegal transport of nuclear materials poses a significant security threat, and resolution 1540 (2004), which emphasizes the importance of Member States taking steps to enforce effective domestic controls over nuclear materials to prevent illicit trafficking.<sup>72</sup> In 2005, the General Assembly (GA) contributed to the discussion through adopting resolution 60/57 on the Prohibition of the Dumping of Radioactive Wastes.<sup>73</sup> Most importantly, in 1997 the GA adopted the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*, the first legal instrument on the issue of nuclear waste disposal.<sup>74</sup> This convention was reinforced by the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons in the *Report on the national implementation of the Action Plan* that was agreed upon in the 2010 Review Conference.<sup>75</sup>

On a regional level, efforts at managing nuclear waste disposal are relatively recent but increasingly comprehensive. The European Commission notes that the nuclear waste from nuclear power production, medicine, research, industry, and agriculture is primarily managed under the European Union’s (EU) Radioactive Waste and Spent Fuel Management Directive.<sup>76</sup> This directive dictates that each Member State should have a national policy and programs on the issue, in addition to attending region-wide peer reviews and with enforcing strict rules on the export of

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<sup>65</sup> World Nuclear Association, *Radioactive Wastes: Myths and Realities*, 2016.

<sup>66</sup> UNEP, *Safe and Environmentally Sound Management of Radioactive Wastes*, 2016.

<sup>67</sup> IAEA, *Radioactive Waste Management Glossary*, 2003.

<sup>68</sup> Ibid.

<sup>69</sup> IAEA, *Management of Radioactive Waste*.

<sup>70</sup> IAEA, *IAEA Safety Standards: Disposal of Radioactive Waste*, 2011.

<sup>71</sup> IAEA, *Nuclear Fuel Cycle and Waste Technology*, 2016.

<sup>72</sup> UN Security Council, *Threats to international peace and security caused by terrorist acts (S/RES/1373)*, 2001; UN Security Council, *Non-proliferation of weapons of mass destruction (S/RES/1540)*, 2005.

<sup>73</sup> UN General Assembly, *Prohibition of the dumping of radioactive wastes (A/RES/60/57)*, 2001.

<sup>74</sup> IAEA, *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*, 2016.

<sup>75</sup> UN 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, *Report on the national implementation of the Action Plan agreed upon in the 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons*, 2015.

<sup>76</sup> European Commission, *Radioactive Waste and Spent Fuel*, 2016.

radioactive waste outside the region.<sup>77</sup> In Africa, the *Bamako Convention on the ban on the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa* was created in 1991 under the United Nations Environment Programme (UNEP) to prohibit the import of any hazardous radioactive waste.<sup>78</sup> On a national level, the United States has the Nuclear Waste Policy Act, a federal law that is the only policy globally that is targeted towards the disposal of nuclear waste from the production of nuclear weapons.<sup>79</sup> However, there are some struggles with implementation of such policies, particularly seen in the failed Yucca Mountain nuclear waste repository, which was intended to be a central location for nuclear waste in the United States.<sup>80</sup> Construction was cancelled in 2012 due to confusion over funding allocation and concerns over the seismic fault line under the mountain, as well as newer developments in nuclear waste management technology since the originally proposed repository.<sup>81</sup>

Other international accords have specifically addressed the issue of dumping of radioactive waste in the ocean, which has been formally illegal since 2006 *London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter* (London Convention) but was previously an accepted means of disposal.<sup>82</sup> The London Convention was first created in 1972 to prevent the deliberate disposal of wastes, including radioactive, under recommendations from the United Nations Conference on the Human Environment, with an additional protocol added in 1996, and entered into force in March 2006.<sup>83</sup> Similarly, the 1985 *South Pacific Nuclear Free Zone Treaty* banned the “stationing, acquisition or testing of nuclear explosive devices and the dumping of nuclear waste within the zone,” one of the first regional documents to specifically ban the dumping of waste into the ocean.<sup>84</sup>

### ***Role of the International System***

Although the SC, GA, and UNEP contribute to the work of nuclear waste management, the main work is done by the IAEA. The IAEA makes recommendations on radioactive waste management through several key mechanisms, overseen by their dual goals of “universally applicable safety regimes through the development of safety standards” and “application of safe and proven technologies in radioactive waste management.”<sup>85</sup> The IAEA primarily meets these goals by “fostering technology transfers, promoting cooperative research and information exchange, and building capacity in Member States,” or acting as an oversight body on waste disposal process.<sup>86</sup> Building Member State capacity takes up the majority of this work as the IAEA first sets universal policies and strategies for radioactive waste management that are recommended to Member States to make consistent domestic policies.<sup>87</sup> Included under this umbrella are legislative and regulatory frameworks for export and import principles, developing a waste management system and allocating responsibilities, planning and developing capabilities, creating a financing system, and involving stakeholders and the public, all of which make up key steps in the process of radioactive waste disposal to which the IAEA can provide guidance.<sup>88</sup> The IAEA has produced two key documents related to policies and strategies for waste management, “Policies and Strategies for Radioactive Waste Management” and “Policies and Strategies for Decommissioning of Nuclear and Radiological Facilities,” and is in the process of producing a document on “Policies and Strategies for Environmental Remediation” due to increased

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<sup>77</sup> European Commission, *Radioactive Waste and Spent Fuel*, 2016.

<sup>78</sup> UNEP, *First Conference of Parties to the Bamako Convention*, 2016.

<sup>79</sup> US Environmental Protection Agency, *Summary of the Nuclear Waste Policy Act*, 2016.

<sup>80</sup> Ibid.

<sup>81</sup> US Environmental Protection Agency, *Summary of the Nuclear Waste Policy Act*, 2016; Greenpeace, *The Deadly Legacy of Radioactive Waste*, 2010.

<sup>82</sup> International Maritime Organization, *Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter*, 2006.

<sup>83</sup> Ibid.

<sup>84</sup> United Nations, Global Issues, *Atomic Energy, Multilateral and bilateral nuclear disarmament and arms regulation agreements*.

<sup>85</sup> IAEA, *Nuclear Fuel Cycle and Waste Technology*, 2016.

<sup>86</sup> Ibid.

<sup>87</sup> Ibid.

<sup>88</sup> Ibid.

dialogue on remediating zones of nuclear disasters.<sup>89</sup> The IAEA is also invested in the disposal of disused sealed radioactive sources, which are generally used for medical, industrial, and research applications and may be unprotected and abandoned when no longer utilized, leading to accidental radioactive exposure.<sup>90</sup> When control of disused radioactive sources is loosened, there is also increased risk of theft for malicious use or illicit trafficking.<sup>91</sup> While the IAEA provides some direct assistance with the recovery of these containers, the majority of its role is to improve Member States' capacity and training on technical procedures.<sup>92</sup> These large-scale strategies demonstrate IAEA's commitment to both waste disposal and waste management, including transport, storage, and treatment.<sup>93</sup> Furthermore, the IAEA provides guidance on decommissioning nuclear facilities, including minimization of waste, long-term management, and training strategies.<sup>94</sup> Recently the IAEA has begun working on environmental remediation, prioritized out of a need to recognize existing contamination sites from previous accidents.<sup>95</sup>

The remaining pillars of predisposal and disposal are more technically complicated. Radioactive waste comes in various physical forms, and can have diverse activity levels and half-lives; this means that not all waste poses the same risk for exposure, though all waste must go through various steps to be neutralized, including generation, treatment, conditioning, storage and transport, characterization, and final disposal.<sup>96</sup> While there are a number of actions the IAEA takes to increase waste disposal capacity, its main work is through professional communication under the International Low Level Waste Disposal Network and Underground Research Facilities networks, which share research and information on best practices.<sup>97</sup> With these main pillars in mind, the IAEA also works through various Meetings, Workshops, and Conferences on Waste Technology. Key IAEA mechanisms include the Net Enabled Waste Management Database through the Radioactive Waste Management Registry, a software to record and process information on global waste management activities; the International Catalogue of Sealed Radioactive Sources and Devices, a database of sealed radioactive source models; and the Development of Indicators of Sustainable Development for Radioactive Waste Management, an indicator system on the environmental management of radioactive waste; and various international conferences, such as the International Conference on Security of Radioactive Sources.<sup>98</sup>

Other UN programs also help the IAEA to meet the aims of safe nuclear waste disposal. UNEP has a program called the "Safe and Environmentally Sound Management of Radioactive Wastes" which primarily supports IAEA efforts with the specific aim of protecting human and environmental health.<sup>99</sup> The UN-wide Earthwatch mechanism has a similar aim, with the goal of providing "integrated information gathered from across the UN system relevant for policy making by building essential partnerships."<sup>100</sup> In the case of radioactive waste, Earthwatch has acted to compile relevant reports and studies on the environmental impact of waste and waste management.<sup>101</sup>

The IAEA currently faces several key challenges to full implementation of safe disposal of radioactive waste globally.<sup>102</sup> As "newcomer" states begin developing capabilities for nuclear technology and nuclear power programs,

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<sup>89</sup> IAEA, *Nuclear Fuel Cycle and Waste Technology*, 2016; IAEA, *Policies and Strategies for Radioactive Waste Management*, *IAEA Nuclear Energy Series*, 2009; IAEA, *Policies and Strategies for the Decommissioning of Nuclear and Radiological Facilities*, *IAEA Nuclear Energy Series*, 2012.

<sup>90</sup> IAEA, *Waste Technology Section: Disused Sealed Source Management*, 2016.

<sup>91</sup> IAEA, *Management for the Prevention of Accidents from Disused Sealed Radioactive Sources*, 2001.

<sup>92</sup> IAEA, *Waste Technology Section: Disused Sealed Source Management*, 2016.

<sup>93</sup> *Ibid.*

<sup>94</sup> IAEA, *Waste Technology Section: Decommissioning of Facilities*, 2016.

<sup>95</sup> IAEA, *Waste Technology Section: Remediation*, 2016.

<sup>96</sup> IAEA, *Waste Technology Section: Predisposal*, 2016.

<sup>97</sup> IAEA, *Waste Technology Section: Radioactive Waste Disposal*, 2016; IAEA, *Waste Technology Section: International Low Level Waste Disposal Network (DISPONET)*, 2016; IAEA, *Waste Technology Section: Underground Research Facilities Network for Geological Disposal (URF)*, 2016.

<sup>98</sup> IAEA, *Waste Technology Section: Radioactive Waste Management Registry (RWMR)*, 2016; IAEA, *Waste Technology Section: Radioactive Waste Management Information Systems*, 2016; United Nations System-Wide Earthwatch, *Radioactive Waste*, 2016.

<sup>99</sup> UNEP, *Safe and Environmentally Sound Management of Radioactive Wastes*, 2016.

<sup>100</sup> United Nations System-Wide Earthwatch, *Mission Statement*, 2016.

<sup>101</sup> *Ibid.*

<sup>102</sup> IAEA, *IAEA Safety Standards: Classification of Radioactive Waste*, 2011.

the IAEA steps in to aid with transfer of knowledge and experience when creating waste disposal policies.<sup>103</sup> However, the lack of existing policy infrastructure in these countries, as well as the varying needs for storage and disposal solutions according to type of waste produced, require extensive expert support.<sup>104</sup> As applications of non-military nuclear science and technology are on the rise worldwide, particularly in agriculture, medicine, research, and industry, the number of these “newcomer” states will increase, as well as the global load of radioactive waste.<sup>105</sup> These states are more likely to produce small amounts of waste, making large-scale and expensive disposal technologies financially infeasible.<sup>106</sup> Additionally, the properly safeguarded technology to address spent fuel and high-level waste, which is “highly radioactive and requires cooling and shielding,” has been proposed but is not yet implemented.<sup>107</sup> For general disposal, spent fuel and high-level waste are currently best handled by large-scale geological underground depositories, but the IAEA estimates that these will not be ready for use before 2020-2025, based on current technology and funding requirements.<sup>108</sup>

### *Nuclear Waste Management Case Study: Japan*

Japan currently has 43 operating nuclear power reactors, in addition to two under construction and 16 under permanent shutdown (including the Fukushima-Daiichi plant).<sup>109</sup> As of 2011, Japan’s nuclear power reactors made up “30% of electricity produced in the country,” meaning that nuclear production is a key source of energy for Japan and that the nuclear waste quantities produced are above average compared to other states with nuclear programs.<sup>110</sup> This, in addition to Japan’s ambitious disposal technology aims, limited geographic area, and recovery from the Fukushima nuclear plant disaster, make Japan a prime example of radioactive waste management challenges.

Currently the majority of nuclear waste in Japan remains in temporary storage after retiring five reactors following the Fukushima disaster in 2011.<sup>111</sup> This level of decommissioning, aided by the IAEA, has left the remaining operating reactors to produce about 12,000 tons of high-level waste a year without sufficient disposal facilities.<sup>112</sup> The 2000 Japanese *Law on Final Disposal of Specified Radioactive Waste* mandates “deep geological disposal of high-level waste,” as per IAEA recommendations, however the only depository repository which meets this demand opened in 2013 and has limited capacity.<sup>113</sup> Japan’s Nuclear Waste Management Organization is searching for a permanent storage site, hindered by ongoing seismic activity and limited land space for underground disposal.<sup>114</sup>

However, the Nuclear Waste Management Organization of Japan (NUMO), also established in 2000, has been ambitious in its approaches to dealing with some of these identified issues; for example, it is considering the feasibility of a sealed disposal facility under the seabed, connected to onshore facility via tunnel, a new scientific idea for disposal techniques.<sup>115</sup> Additionally, Japan uniquely reprocesses spent fuel through separating reusable uranium and plutonium from waste, which results in high-level radioactive waste that is considered riskier for disposal under the IAEA safety standards but also significantly reduces the overall volume of waste.<sup>116</sup> NUMO has also set a goal of 31 December 2016 as the deadline for determining scientifically suitable areas for the geological disposal of radioactive waste, following models set by Finland and Sweden.<sup>117</sup>

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<sup>103</sup> Martinez, Technological Challenges to Safe Disposal of Radioactive Waste, *IAEA Division of Public Information*, 2012.

<sup>104</sup> *Ibid.*

<sup>105</sup> *Ibid.*

<sup>106</sup> *Ibid.*

<sup>107</sup> *Ibid.*

<sup>108</sup> *Ibid.*

<sup>109</sup> IAEA Power Reactor Information System, *Japan*, 2016.

<sup>110</sup> World Nuclear Association, *National Policies: Radioactive Waste Management, Appendix 3*, 2016.

<sup>111</sup> Humber, Nuclear Waste in Search of a Home, *Bloomberg*, 2015.

<sup>112</sup> *Ibid.*

<sup>113</sup> World Nuclear Association, *National Policies: Radioactive Waste Management, Appendix 3*, 2016.

<sup>114</sup> Humber, Nuclear Waste in Search of a Home, *Bloomberg*, 2015; NUMO, *Home*, 2016.

<sup>115</sup> The Japan Times, *Japan Studying Disposal of Highly Radioactive Waste under Seabed*, 2015.

<sup>116</sup> Nuclear Waste Management Organization of Japan, *About NUMO*, 2015.

<sup>117</sup> Nuclear Waste Management Organization of Japan, *Scientifically Suitable Areas for the Geological Disposal of Specified Radioactive Waste to be Announced by End of 2016*, 2015.

## **Conclusion**

While the IAEA's existing radioactive waste framework is comprehensive, there remain challenges left to address. Following the Fukushima nuclear accident and the Iran Probe, the IAEA was surrounded by controversy. Specifically, the Iran Probe led to debate on whether the IAEA had a responsibility to reveal undisclosed domestic nuclear activity from Iran, especially with pressure from the United States' delegation, a situation that was originally triggered by the unexplained presence of nuclear waste.<sup>118</sup> In the case of the Fukushima Daiichi nuclear plant meltdown, the IAEA suddenly had to deal with contaminated and leaking nuclear waste products due to a nuclear plant crisis, a previously unsupported area of response which remains an emerging area of concern.<sup>119</sup>

On a broader level, there also remain challenges with managing the dialogue between UN bodies such as the SC, GA, and IAEA Contact Expert Group for Nuclear Legacy Initiatives during discussion of nuclear waste.<sup>120</sup> The topic of waste disposal has repeatedly created obstacles to achieving consensus while discussing radioactive waste in conjunction with peaceful nuclear development.<sup>121</sup> The Contact Expert Group continues to debate locations and safety levels for nuclear repositories.<sup>122</sup> In the GA, discussion has stalled due to debate on whether or not IAEA restrictions infringe on sovereignty.<sup>123</sup> Even a topic such as environmental remediation, while supported by the UN and the Sustainable Development Goals, presents challenges to protectionist national policies and can cause rifts in amiable international dialogue.<sup>124</sup> Therefore, while nuclear waste disposal procedures and processes currently exist under the IAEA, they remain contentious.

Ultimately, the management of nuclear waste is an increasingly pressing issue as more of the world turns to the use of peaceful nuclear technology. While controversies remain and state-to-state inconsistencies still exist, political crises such as Iran and Russia, and technological crises such as Chernobyl and Fukushima, point to the fact that this issue will not resolve itself.<sup>125</sup> It is up to the international community and the IAEA General Conference to summon the power of consensus to ensure global safety from radioactive waste products and guarantee equitable protection in the face of new technological developments such as nuclear power.

## **Further Research**

Challenges, such as those listed above, generate important questions about how the global community can proactively reach consensus on safely managing radioactive waste. For instance, how can the international community manage financial and scientific delays in disposal technology? Can the IAEA improve response time and disposal procedures during nuclear crises, such as in Japan? Can the threat of theft or loss of disused sealed radioactive containers be mitigated while also addressing challenges in domestic disposal infrastructure? How can "newcomer" nuclear countries develop their nuclear waste disposal facilities quickly and safely, while alleviating financial obstacles? How will the rapidly expanding global focus on industrial, scientific, and medical nuclear technology challenge existing waste disposal facilities? Questions such as these are key to developing safer international nuclear waste disposal processes in the future.

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<sup>118</sup> Kerr, IAEA Iran Probe Winding Down, *Arms Control Association*, 2004.

<sup>119</sup> IAEA, *Fukushima Nuclear Accident Update Log*, 2016; IAEA, *Fukushima Nuclear Accident*, 2016.

<sup>120</sup> UN, Department of Public Information, *Hearing Introduction of Annual Report, General Assembly Adopts Resolution Supporting Atomic Energy Agency's Work on Nuclear Safety (GA/11578)*, 2014.

<sup>121</sup> Gonzales, The Safety of Radioactive Waste Management: Achieving Internationally Acceptable Solutions, *IAEA Bulletin*, 2000.

<sup>122</sup> IAEA, Safety of Radioactive Waste Disposal, *Proceedings of an International Conference*, 2005, p. 6.

<sup>123</sup> UN, General Assembly, *Nuclear-Weapon-free zones, Dumping of Nuclear Waste Among Issues as Disarmament Committee Continues General Debate*, 2006.

<sup>124</sup> Falck, *Environmental Remediation: Strategies & Techniques for Cleaning Radioactively Contaminated Sites*, 2001; IAEA, *Safety of Radioactive Waste Disposal*, 2005.

<sup>125</sup> Peter, *Russia explores old nuclear waste dumps in Arctic*, 2013; IAEA, *Fukushima Nuclear Accident*, 2016.

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*This publication is key to understanding the challenges facing the IAEA in managing and disposing the various types of radioactive waste. Along with providing an in-depth discussion of how different facilities and purposes for nuclear energy result in different forms of waste and concentrations of radionuclides, this document provides good insight into how classification is key to developing proper disposal techniques. While technical, delegates will find that this publication comprehensively discusses the diversity of radioactive waste and the technology required to safely store, transport, treat, and dispose of varied forms of waste.*

International Atomic Energy Agency. (2011). *IAEA Safety Standards: Disposal of Radioactive Waste*. Retrieved 5 June 2016 from: [http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449\\_web.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf)

*The IAEA Safety Standards are the core framework to all of the IAEA's action under their Safety and Security mandate pillar, particularly in the case of nuclear waste disposal. This document provides all of their fundamental safety principles, requirements and measures, in both international and state operations, including applying safety standards, radiation protection in the operational and post-closure period, and legal and political responsibilities for disposal. Delegates will find this publication key to understanding how the IAEA's aims are applied in states, as well as challenges in universally applying these standards.*

International Atomic Energy Agency. (2016). *Waste Technology* [Website]. Retrieved 20 April 2016 from: <https://www.iaea.org/OurWork/ST/NE/NEFW/Technical-Areas/WTS/home.html>

*This Website is the key to IAEA's approach to waste management, with topics from facility management to waste disposal to the contact expert group discussed. Additionally, this site provides links to key organization mechanisms such as the Contact Expert Group and relevant Meetings & Conferences. Finally, this page provides a good overview of both Objectives and Post Accident Cleanup for a review of past challenges and future goals in waste technology, key for delegate understanding of the issue.*

United Nations, Department of Public Information. (2014, November 3). *Hearing Introduction of Annual Report, General Assembly Adopts Resolution Supporting Atomic Energy Agency's Work on Nuclear Safety (GA/11578)* [Meetings Coverage]. Retrieved 20 April 2016 from: <http://www.un.org/press/en/2014/ga11578.doc.htm>

*This lengthy and in-depth meetings coverage is an excellent example of the varied dialogue surrounding nuclear waste management and disposal. This source covers multiple statements made on Security-General's note A/69/255 and the report A/69/L.7, including the divisive dialogue on where the IAEA's mandate should end and country accountability should begin. Even though the dialogue is fraught with inter-state tensions, it is an excellent example of the marriage between technology and politics that the IAEA is attempting to forge during discussions of nuclear waste.*

United Nations, Information Centers. (1997). *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*. Retrieved 6 June 2016 from: <https://www.iaea.org/sites/default/files/infirc546.pdf>

*First adopted in September 1997 by a Diplomatic Conference convened by the IAEA, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management was a key document in recognizing the threat that improperly managed radioactive waste presents to global security. This convention is lengthy and recognizes the key goals of the international community, including the goals of safety standards, science and technology objectives, the role of the public, and developing a culture of safety. Delegates can use the goals in this document to establish where the IAEA has struggled or succeeded in meeting the Convention goals over the past two decades.*



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## II. Promoting Nuclear Safety and Security

*“The unleashed power of the atom has changed everything save our modes of thinking, and we thus drift towards unparalleled catastrophe.”*<sup>126</sup>

### **Introduction**

Nuclear safety and security have been priority agenda items of the International Atomic Energy Agency (IAEA) since the inception of the organization.<sup>127</sup> However, recent global growth in nuclear technology use has emphasized the need to reopen dialogue on promoting nuclear safety and security.<sup>128</sup> As of 2016, a record “30 countries worldwide are operating 444 nuclear reactors for electricity generation and 63 new nuclear plants are under construction in 15 countries.”<sup>129</sup> Additionally, nuclear power currently made up 10.9% of the world’s electricity in 2012, and by 2015, 13 states relied on nuclear energy to supply one quarter of their energy.<sup>130</sup> With these numbers ever growing, the need to ensure the safety of these plants and respond to technological changes is imperative.<sup>131</sup> Most recently, proposed revisions to the IAEA Nuclear Safety Action plan, and the creation of the new IAEA12-point plan on Nuclear Safety and Security after the Fukushima-Daiichi incident, have demonstrated an on-going evolution of international best practices on nuclear safety and security under the IAEA.<sup>132</sup> While addressing the challenges that discussing nuclear security on a global platform presents, including issues of sovereignty, policy sustainability, and feasibility, the IAEA must retain its role as a neutral body at the forefront of expert advice on nuclear management<sup>133</sup>

Nuclear safety and security are usually addressed simultaneously by the IAEA, but are defined separately. Under the IAEA’s Major Programme on Nuclear Safety and Security, nuclear safety encompasses “the protection of people and the environment against radiation risks, and the safety of facilities and activities that give rise to radiation risks.”<sup>134</sup> Safety therefore encompasses all concerns related to radiation safety and nuclear installations, in order to ensure that the production of nuclear energy is standardized and consistent.<sup>135</sup> In contrast, nuclear security is defined 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.”<sup>136</sup> Security therefore serves to ensure that there is no tampering of nuclear facilities or nuclear products.<sup>137</sup> While these two aspects of the IAEA’s work are notably different at first glance, they are closely related goals in the use of best practices and standards, and ensuring that both priorities are met during nuclear production is imperative.<sup>138</sup>

### **International and Regional Framework**

The United Nations (UN) has established many key documents on nuclear safety and security, with this topic representing the historical core of much of the UN’s nuclear disarmament work.<sup>139</sup> In fact, the General Assembly (GA)’s very first resolution was written to safely respond to the discovery of atomic energy.<sup>140</sup> The GA has adopted several recent resolutions on IAEA recommendations, including resolution 67/45 (2013) on reducing the risk of

<sup>126</sup> Arms Control Association, *Nuclear Deterrence in a Changed World*, 2012.

<sup>127</sup> IAEA, *Department of Nuclear Safety and Security*, 2014.

<sup>128</sup> NTI, *The IAEA’s Nuclear Security Role*, 2013; Bunn, *Preventing Nuclear Terrorism: Continuous Improvement or Dangerous Decline*, 2016, p. i.

<sup>129</sup> Nuclear Energy Institute, *World Statistics: Nuclear Energy Around the World*, 2015.

<sup>130</sup> Nuclear Energy Institute, *World Statistics: Nuclear Energy Around the World*, 2015; IAEA, *NUSIMS: Online Tool to Strengthen Nuclear Security*, 2016.

<sup>131</sup> Nuclear Energy Institute, *World Statistics: Nuclear Energy Around the World*, 2015; IAEA, *Power Reactor Information Systems (PRIS)*, 2016.

<sup>132</sup> IAEA, *Action Plan on Nuclear Security*, 2003.

<sup>133</sup> IAEA, *Department of Nuclear Safety and Security*, 2014.

<sup>134</sup> IAEA, *IAEA Safety Glossary*, 2007.

<sup>135</sup> *Ibid*

<sup>136</sup> *Ibid.*

<sup>137</sup> *Ibid.*

<sup>138</sup> *Ibid.*

<sup>139</sup> UNODA, *Nuclear Weapons*, 2016.

<sup>140</sup> *Ibid.*

nuclear mismanagement, and GA resolution 70/10 (2015), which highlights the IAEA's role in ensuring peace and international cooperation through nuclear security and safety.<sup>141</sup> While noting the significance of these documents, it is important to remember that under Article 11 of the *Charter of the United Nations*, the GA is responsible for considering general principles of cooperation under nuclear disarmament, particularly through its subsidiary body the United Nations Disarmament Commission (UNDC), but unlike the IAEA does not fulfil the role of setting best practices or acting in a supervisory capacity to provide direct advice on nuclear safety and security management.<sup>142</sup> The *Treaty on the Non-Proliferation of Nuclear Weapons* (NPT) (1968) provides important guidance on this issue, as it establishes safeguards requirements for its States Parties.<sup>143</sup> Additionally, several Security Council (SC) resolutions, including 1373 (2001), 1540 (2004), and 1887 (2009) are key to addressing issues of nuclear proliferation and disarmament, and reaffirmed the role of the IAEA in supporting SC and GA efforts to ensure safety and security.<sup>144</sup> The IAEA General Conference recently adopted resolution 57/16 (2013), which reaffirmed the need for international measures to strengthen and improve coordination of nuclear security procedures.<sup>145</sup> Additionally, IAEA resolution 59/9 (2015), IAEA resolution 59/10 (2015), and IAEA resolution 59/13 (2015), specifically discuss the need to improve nuclear safety and security.<sup>146</sup>

On a regional level, nuclear safety and security remain an ongoing focus of policy-creating bodies. The African Union recently established the African Institute for Security Studies to improve nuclear peace and security, especially in regards to regional peace and security concerns.<sup>147</sup> The European Union (EU) has a similar Nuclear Safety Directive, which aims to integrate European states into a single directive to ensure the safety of nuclear use throughout all Member States of the EU.<sup>148</sup> Additionally, the Division of Nuclear Security (NSNS) serves as another of the IAEA's mechanisms to address nuclear safety and security, being "responsible for coordinating and implementing the IAEA's nuclear security programme to protect against, detect and respond to criminal acts or acts of nuclear terrorism and threats."<sup>149</sup> Through the NSNS, IAEA is able to work closely alongside the GA and SC to help to enforce and enact resolutions, such as SC resolution 1373 (2001), which addressed international terrorism and the movement of nuclear materials, and resolution 1540 (2004), which obliged Member States to have laws in place to prohibit the illegal movement of nuclear materials by non-state actors in order to improve domestic nuclear security.<sup>150</sup>

### ***Role of the International System***

Building upon the foundational international documents on nuclear safety and security, the IAEA's goal is to provide direct support and best practices for implementing these high-level aims. IAEA Director-General Yukiya Amano described the IAEA as "seeing itself as the global 'platform'" for nuclear security efforts, fulfilling the "central role" in setting global standards for nuclear production.<sup>151</sup> Essentially, the IAEA serves as the "multilateral forum for discussion and debate" on nuclear issues, in order for consistent international standards to be communicated to the states via recommendations, resolutions (in collaboration with the GA and SC), technical support and research, and international dialogue.<sup>152</sup>

The main means through which the IAEA ensures consistent safety and security standards is to act as an inspector through several key regulatory frameworks.<sup>153</sup> These include the Safety and Security Coordination Section; the

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<sup>141</sup> Gil, *UN General Assembly Resolution Recognizes IAEA's Work in Development, Nuclear Safety, Non-Proliferation*, 2015; UN General Assembly, *Reducing nuclear danger (A/RES/67/45)*, 2012.

<sup>142</sup> *Charter of the United Nations*, 1945.

<sup>143</sup> UNODA, *Nuclear Weapons*, 2016.

<sup>144</sup> IAEA, *UN Security Council resolutions*, 2016.

<sup>145</sup> IAEA, *Department of Nuclear Safety and Security*, 2014.

<sup>146</sup> IAEA, *59<sup>th</sup> IAEA General Conference (2015) Resolutions and Other Decisions*, 2016.

<sup>147</sup> Institute for Security Studies, *Improving Nuclear Safety and Security: Lessons from the Past*, 2016.

<sup>148</sup> European Commission, *Nuclear Safety*, 2016.

<sup>149</sup> IAEA, *Department of Nuclear Safety and Security*, 2014.

<sup>150</sup> UN Security Council, *Threats to international peace and security caused by terrorist acts (S/RES/1373)*, 2001; 1540 Committee, *United Nations Security Council Resolution (2004)*, 2016.

<sup>151</sup> NTI, *The IAEA's Nuclear Security Role*, 2013.

<sup>152</sup> *Ibid.*

<sup>153</sup> IAEA. *Promoting Nuclear Security: What the IAEA is Doing*, 2015; IAEA, *Department of Nuclear Safety and Security*, 2014.

Department of Nuclear Security; the Nuclear Energy Safety Action Team; and other more specialized programs, such as the Incident and Emergency Centre, the Incident and Emergency System, and the Global Nuclear Safety and Security Network.<sup>154</sup> These different frameworks exist to help to separate the different levels of security and safety when it comes to nuclear energy, to provide expert technical support, and to propose changes to international safety standards, as seen most recently after the Fukushima-Daiichi incident in 2011.<sup>155</sup>

#### *Safety and Security Coordination Section (SSCS)*

Established to ensure uniformity across the IAEA's work, the SSCS mandate is to "ensure technical consistency and coordination between the IAEA's activities under the nuclear, radiation, transport and waste safety and nuclear security programs."<sup>156</sup> The SSCS acts as a global focal point for nuclear emergency preparedness, sending out inspectors to nuclear plants as well as discussing nuclear accident prevention.<sup>157</sup> Under the guidance of the Safety and Security Coordination Section (SSCS), the IAEA is able to ensure "technical consistency and coordination between [the IAEA's] activities under the nuclear, radiation, transport and waste safety and nuclear security programs."<sup>158</sup> The SSCS also presides over the Incident and Emergency Centre (IEC) and will as an integral part of the IAEA's future response to nuclear emergencies.<sup>159</sup>

#### *Division of Nuclear Security (NSNS)*

Within the IAEA, the NSNS acts to establish international protocol to address nuclear security and is responsible for "coordinating and implementing the IAEA's nuclear security programme to protect against, detect and respond to criminal acts or acts of nuclear terrorism and threat"<sup>160</sup> Through the NSNS, the IAEA is able to work closely alongside the GA and SC to help to enforce and enact resolutions.<sup>161</sup> The NSNS also allows the IAEA to monitor Member States' nuclear programs, provide advice on improving security standards through its technical experts, and "respond to the needs of its Member States in relation to nuclear safety and nuclear security."<sup>162</sup> The Division also provides further specialized services for Member States, such as education and training appraisal services on nuclear safety and security and education and training review service, as well as engineering safety reviews, integrated regulatory review services, advisory services and operational safety reviews.<sup>163</sup> These services provided by the NSNS allow for the IAEA to create scientifically sound and globally consistent nuclear security standards.

#### *Nuclear Energy Safety Action Team*

The Nuclear Safety Action Team, which functions under the IAEA, serves as a tool that allows the organization to regulate and ensure that Member States are adhering to existing international protocol in regards to nuclear energy safety and security.<sup>164</sup> The Team was set up specifically to enforce the IAEA's Nuclear Safety Action Plan which was established in 2011 after Fukushima-Daiichi.<sup>165</sup> The 12-point action plan set forth by the IAEA identified the man-made errors from which nuclear crises can arise and focused strongly on the need for education to ensure that all operators of nuclear facilities world-wide meet safety standards.<sup>166</sup>

#### *Other Bodies*

Additional IAEA programs, such as the Incident and Emergency Centre (IEC), the Incident and Emergency System (IES), and the Global Nuclear Safety and Security Network (GNSSN), all serve to bridge the gap between nuclear safety and security measures.<sup>167</sup> The IEC acts as the a first responder after a nuclear emergency, setting in place the

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<sup>154</sup> Arms Control Association, *Nuclear Deterrence in a Changed World*, 2012.

<sup>155</sup> Ibid

<sup>156</sup> Ibid.

<sup>157</sup> IAEA, *Prepare and Respond: The Incident and Emergency Centre (IEC)*, 2015.

<sup>158</sup> IAEA, *Promoting Nuclear Security: What the IAEA is Doing*, 2015.

<sup>159</sup> IAEA, *Department of Nuclear Safety and Security*, 2014.

<sup>160</sup> Ibid.

<sup>161</sup> UN Security Council, *Threats to international peace and security caused by terrorist acts (S/RES/1373)*, 2001; 1540 Committee, *United Nations Security Council Resolution (2004)*, 2016.

<sup>162</sup> IAEA, *Nuclear Security*, 2016; IAEA, *Department of Nuclear Safety and Security*, 2014.

<sup>163</sup> IAEA, *Department of Nuclear Safety and Security*, 2014.

<sup>164</sup> Ibid.

<sup>165</sup> IAEA, *IAEA Sets up Team to Drive Nuclear Safety Action Plan*, 2011.

<sup>166</sup> IAEA, *Department of Nuclear Safety and Security*, 2014.

<sup>167</sup> IAEA, *IAEA's Incident and Emergency System*, 2015.

protocol for Member States to follow should there be an issue at a nuclear facility.<sup>168</sup> The IEC maintains around-the-clock access for Member States through the IES contact line should they ever need immediate assistance due to a nuclear emergency.<sup>169</sup> Finally, the GNSSN is a human and web platform to ensure the “safety of nuclear installations throughout the world... [and ensure that] all nuclear installations are operating safely.”<sup>170</sup>

### ***Case Study: Chernobyl Incident***

One of the most famous nuclear accidents, the Chernobyl Disaster took place on 26 April 1986 when facility workers incorrectly administered a routine safety check, resulting in a steam explosion and fire released that released five percent of the radioactive core into the atmosphere and the air, with the particles being dragged downwind and into other countries.<sup>171</sup> Two plant workers died immediately as a result and within the following weeks 28 people died due to acute radiation poisoning.<sup>172</sup> The workers were later found to be inadequately trained, and the accident served as an example of the possible dangers of nuclear energy, particularly in instances when technical expertise is lacking.<sup>173</sup> The incident caused the IAEA to coordinate with international experts to produce stricter safety standards to lower the risk of a similar event in the future.<sup>174</sup>

### ***Case Study: The Fukushima-Daiichi Incident***

An earthquake and tsunami off the coast of Japan on 11 March 2011 caused a critical situation at the Fukushima-Daiichi nuclear power plant.<sup>175</sup> With the power supply cut off and back-up systems compromised due to structural damage, the cooling system failed and the reactor core became overheated.<sup>176</sup> Although the plant met safety standards, it was not built to withstand large magnitude earthquakes and subsequent tsunamis; additionally, because large-scale nuclear accidents are rare, experts could only predict what would occur should the core continue to overheat.<sup>177</sup> Because of the incident at Fukushima-Daiichi, the IAEA Nuclear Safety Action Team established the 12-Point Nuclear Safety Action Plan, which aims to make the use of nuclear energy safer through a number of strategies, including stress tests to assess facilities’ back-up systems and response plans.<sup>178</sup>

### ***Conclusion***

By increasing global preparedness through the creation of action plans and international mandates, the IAEA strives to ensure global nuclear safety and security.<sup>179</sup> Despite the IAEA’s many efforts, challenges still remain.<sup>180</sup> Ensuring consistent global nuclear security and safety standards requires significant technical support, and with an increasing number of countries turning to nuclear power, establishing adequate safety standards for all domestic nuclear programs is a significant technical and financial challenge. Nuclear safety and security are also politically charged topics, with concerns of sovereignty, the continued possession by some states of nuclear weapons, and the UN’s official policy of disarmament being topics of significant friction.<sup>181</sup> Concurrently, the willingness of Member States to adhere with potentially restrictive policies remains an ongoing challenge.<sup>182</sup> However, the importance of nuclear safety and security requires these challenges to be met.

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<sup>168</sup> IAEA, *Prepare and Respond: The Incident and Emergency Centre (IEC)*, 2015.

<sup>169</sup> *Ibid.*

<sup>170</sup> IAEA, *Global Nuclear Safety and Security Network*, 2016.

<sup>171</sup> World Nuclear Association, *Chernobyl Accident 1986*, 2016.

<sup>172</sup> *Ibid.*

<sup>173</sup> *Ibid.*

<sup>174</sup> *Ibid.*

<sup>175</sup> American Nuclear Society, *Fukushima Daiichi: ANS Committee Report*, 2012.

<sup>176</sup> *Ibid.*

<sup>177</sup> *Ibid.*

<sup>178</sup> IAEA, *IAEA Sets up Team Drive Nuclear Safety Action Team*, 2011.

<sup>179</sup> American Nuclear Society, *Fukushima Daiichi: ANS Committee Report*, 2012; United Nations, Security Council, *Security Council Statement Reaffirms Concern over WMDs as It Marks 10 Years since Adopting Landmark Non-Proliferation Text*, 2014.

<sup>180</sup> IAEA, *Nuclear Security Report 2015*, 2015.

<sup>181</sup> IAEA, *Promoting Nuclear Security: What the IAEA is Doing*, 2015.

<sup>182</sup> IAEA, *Promoting Nuclear Security: What the IAEA is Doing*, 2015.



### ***Further Research***

While nuclear safety and security is a broad, over-arching topic, it is important to focus on the specific concerns of the international community. For instance: in what ways can Member States improve upon current recommendations on nuclear safety and security? How can the IAEA alleviate future nuclear crises, as seen in Chernobyl and Fukushima-Daiichi? What special considerations should be taken to address varying levels of nuclear development in Member States, including the development of new programs? What role should the IAEA play in alleviating malicious tampering of nuclear facilities and products? How can the IAEA aid Member States in implementing newer and more technologically advanced nuclear safety protocols?

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*Examining the importance of nuclear security, this article explains the ways in which nuclear weapons and materials constitute a global threat, as well as discusses potential ways to mitigate this on-going threat. This article aims to pinpoint in what ways the international community as well as international organizations such as the IAEA can solve the growing nuclear terrorist threat. Referencing the 2016 Nuclear Summit, this work aims to assess the growth and gaps within nuclear practices.*

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*The Nuclear Security Report from 2015 is one of the most recent reports on nuclear security to be released by the IAEA. It recommends specific actions to be taken by the Board of Governors to help increase and promote nuclear security including Member States continuing their active volunteered support and funding to the Nuclear Security Fund. The document itself shows the work that the IAEA has completed in regards to Nuclear Security, proving the advancements in the field. The document will prove useful to delegates, providing information ranging from the recommended actions of the Board of Governors to the strategies that are already in place.*

International Atomic Energy Agency. (2016). *NUSIMS: Online Tool to Strengthen Nuclear Security* [Website]. Retrieved 16 April 2016 from: <https://www.iaea.org/newscenter/news/online-self-assessment-tool-strengthens-nuclear-security-the-iaeas-nuclear-security-information-management-system>

*The IAEA NUSIMS is an online tool and document that gives an in-depth explanation as to the self-assessment tools that the IAEA and Member States have been utilizing to see the improvement and implementation of nuclear security within different Member States. Through the NUSIMS Member States can self-analyze country-specific nuclear security related information, and in turn, give suggestions and advice as to how to improve upon the already existing structures that many Member States have when it comes to their nuclear programs. This tool allows for accurate country information to be obtained and acts as a vital source of information for the improvement of nuclear safety and security amongst Member States and the entire world. Delegates will find it a useful hub of information when it comes to statistics and current analyses of current and potentially future nuclear security strategies.*

International Atomic Energy Agency. (2016). *Power Reactor Information System (PRIS)* [Website]. Retrieved 14 May 2016 from: <https://www.iaea.org/pris/>

*Utilizing this database, delegates may select any state to see their use of nuclear energy, the status of nuclear power plants and the potential for future growth of nuclear power plants as the statistics are constantly changing. The allowance of selecting different states lets delegates compare the different use of nuclear power and shows the global variance in nuclear usage. This tool allows for the in-depth examination of the current reactors that are in use in specific states, allowing them to have a better understanding of the level in which nuclear energy is used within a Member State.*

Nuclear Energy Institute. (2015). *World Statistics: Nuclear Energy Around the World* [Website]. Retrieved 14 May 2016 from: <http://www.nei.org/Knowledge-Center/Nuclear-Statistics/World-Statistics>

*With a series of different statistics on the world's use of nuclear energy, the Nuclear Energy Institute provides a series of resources for delegates to utilize when in need of statistics, ranging from the increased use of nuclear energy, the world nuclear power plants currently in use, and the 13 states that utilize nuclear energy to supply the quarter of their energy supply. This series of documents provides excellent evidence for delegates to understand the magnitude of the use of nuclear energy.*

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