

## NGO-Government Partnerships in Strengthening Radiological Security

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### Introduction

The International Atomic Energy Agency's member states recognize and share the notion that "the responsibility for nuclear security rests entirely with each State" and that appropriate and effective national systems for nuclear security are "vital in facilitating the peaceful use of nuclear energy and enhancing global efforts to combat nuclear terrorism."<sup>1</sup> While in full agreement and support of the notion of state responsibility for nuclear security, the authors of this paper, representing both nongovernmental and governmental organizations, suggest that governments' efforts in building effective nuclear security systems, especially when it comes to the security of radioactive sources used for various civilian and commercial applications, can be supported by nongovernmental organizations (NGOs). The paper will back this hypothesis with concrete examples of partnerships in radiological security between the James Martin Center for Nonproliferation Studies and governmental bodies of several IAEA member states.

### What is an NGO?

The term "NGO" can be misleading as it has different meanings in different countries. Many equate NGOs with lobbying or advocacy groups applying pressure to governments and trying to mobilize public opinion. Others consider them as professional and/or informal organizations or networks, clusters of activists, or social movements.

For the purposes of this paper, the authors use the term "NGO" as it was coined by the United Nations in 1945. The UN recognizes NGOs as private bodies which are independent from government control, not seeking to challenge governments, non-profit-making and non-criminal.<sup>2</sup> Thus, this paper uses the term "NGO" to contrast a private organization with a government or government-enabled entity. In this instance, the term "NGO" will be used to refer to any private non-profit academic or research institution, organization, or think-tank.

Despite different interpretations of NGOs and their missions, there is a growing recognition, at least in the security field, that NGOs "have moved far beyond simple advocacy to being experts on specific aspects of disarmament and security issues. NGOs produce and disseminate original research, are active in policy design, and carry out difficult work 'on the ground.'"<sup>3</sup> There is a strong body of evidence that suggests that governments and other state stakeholders rely on various private research and academic entities in helping them in their nonproliferation, disarmament, and more recently, nuclear security enhancement efforts.

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<sup>1</sup> *Developing Sustainable Nuclear Security Regimes with IAEA Support*, September 20, 2018, IAEA, <https://www.iaea.org/newscenter/news/developing-sustainable-nuclear-security-regimes-with-iaea-support>

<sup>2</sup> Peter Willets, *What is a Non-Governmental Organization?* <http://www.gdrc.org/ngo/peter-willets.html#71>

<sup>3</sup> "NGOs as Partners: Assessing the Impact, Recognizing the Potential," *Disarmament Forum*, 2002, <https://www.unidir.org/files/publications/pdfs/ngos-as-partners-assessing-the-impact-recognizing-the-potential-en-351.pdf>

## NGOs and Nuclear Security

When it comes to the involvement of NGOs in the field of nuclear security, a lot of progress has been achieved since 2014. Both, the 2014 Nuclear Security Summit (NSS) in Hague and the last NSS in Washington, DC, in 2016, included notable side events called *Nuclear Knowledge Summits* which brought together experts from academic and research institutions and other NGOs from all over the world. The purpose of these events, as defined by the World Institute of Nuclear Security (WINS), was to “create a broad platform of experts and NGO support internationally in order to promote nuclear security and to support the NSS process.”<sup>4</sup> Although names of these side-event summits did not bear the word “NGO”, they were commonly referred to as “NGO summits.” Adding the meetings of experts and NGOs communities to the NSS 2014 and 2016 agendas was a significant breakthrough in building NGO-government partnerships and bridges in the field of nuclear and radiological security. It increased the visibility and role of the non-governmental sector in strengthening nuclear security by complementing existing national and international efforts.

There are several prominent nongovernmental actors in the nuclear security field including such organizations and entities as the World Institute of Nuclear Security (WINS), Nuclear Threat Initiative (NTI), and Fissile Materials Working Group (FMWG).<sup>5</sup> Standing next to these nuclear security champions are a number of other research and academic institutions and think-tanks working on nuclear and radiological security issues independently or in partnerships with government stakeholders.

The James Martin Center for Nonproliferation Studies at Middlebury Institute of International Studies (Monterey, CA, USA) is one such private research and academic institution. Founded in 1989, CNS is the world’s largest organization devoted exclusively to research and training on nonproliferation issues. In the last decade, the Center has boosted its nuclear security expertise and reputation through various research and capacity-building projects. Due to its international recognition, its ground-breaking and innovative research, and highly competitive and reputable education and training programs, CNS has successfully built partnerships with various stakeholders, including the governments of the United States, Sweden, Norway, United Kingdom, Canada, Japan, and South Korea, as well as industries and academic institutions worldwide, both in WMD nonproliferation and the nuclear security domain.

In the post-9/11 world, the problem of securing nuclear and radioactive material has been addressed by both governmental and nongovernmental actors. There is a general consensus that the threat of a radioactive dispersal device (RDD) or “dirty bomb” being used by terrorist organizations is genuine. At the fourth Nuclear Security Summit held in Washington, DC in 2016 state leaders recognized “that the shared goal of nuclear security can be advanced by strengthening further the security of high activity sealed radioactive sources (HASS)” and

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<sup>4</sup> *The 2014 Nuclear Knowledge Summit: Towards Sustainable Nuclear Security*, WINS, <https://www.wins.org/files/factsheet-def-03-03-2014.pdf>

<sup>5</sup> FMWG is a professional coalition of over 80 civil society organizations from around the world working to provide actionable policy solutions to keep the world safe from nuclear terrorism. It is currently hosted by the Center for Arms Control and Non-Proliferation. <https://armscontrolcenter.org/fmwg/>

affirmed “their commitment to encourage and support such an effort.”<sup>6</sup> The authors believe that governments, nongovernmental entities and civil society should unite to support this effort.

CNS has extensively worked on the problems of illicit trafficking in nuclear and radioactive material. It maintains the *Global Incidents and Trafficking Database* for the Nuclear Threat Initiative. The database uses on open source information exclusively, which implies collecting information from publicly available sources. It currently includes 1,156 incidents involving nuclear and radioactive material reported between January 2013 and October 2019, with accompanying annual reports, maps, and infographics. The database “provides free and open access to centralized information on incidents of nuclear and other radioactive material that has been lost, stolen, or is otherwise out of regulatory control” and “offers researchers and policymakers a unique resource to assess the nature and scope of nuclear security risks.”<sup>7</sup>

IAEA Incident and Trafficking Database (ITDB), which is generated from voluntary reporting by countries, goes back to 1995. However, the IAEA publicly releases only a statistical summary of the ITDB, not details of individual incidents. Fragmented reporting, both in countries’ confidential reports to the IAEA and in their public disclosures, makes it more challenging to get an overall picture of nuclear and radiological security worldwide.

CNS has a dedicated team of experts working on nuclear and radiological security issues. It has been involved in various research projects with a wide range of US and foreign government agencies, as well as other private entities. One such involvement includes collaboration aimed at enhancing radiological security at hospitals. For examples, in 2016 CNS worked with the New York City Department of Health. Center’s research team drew up a self-assessment tool for hospitals and other medical and research facilities to help determine if it made sense for them to substitute non-isotopic technology (X-rays) for cesium-137 sources for blood and research irradiators in order to permanently reduce the threat of radiological terrorism. The survey helped convince all the relevant facilities that it was in their economic and practical interest to undergo the substitution.

CNS continues its engagement in projects aimed at replacing high risk radioactive sources with alternatives, as well as support international efforts such as HEU minimization in civil applications, addressing problems of orphan radioactive sources, and other projects. Findings of CNS work in these areas were reported at recent international conferences, including the *IAEA International Conference on Nuclear Security: Commitments and Actions (2016)*, the *IAEA International Conference on the Security of Radioactive Material: The Way Forward for Prevention and Detection (2018)*, and other events.

The remainder of this paper will focus on the role that CNS currently plays in supporting several governments’ efforts aimed at strengthening radiological security at national, regional, and international levels. It will do so by examining three areas of the Center’s activities: 1) promoting dialogue between various stakeholders; 2) building national capacities through

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<sup>6</sup> INFCIRC/910, IAEA, *Joint Statement on Strengthening the Security of High Activity Sealed Radioactive Sources*, <https://www.iaea.org/sites/default/files/publications/documents/infcircs/2017/infcirc910.pdf>

<sup>7</sup> *The Global Incidents and Trafficking Database*, Nuclear Threat Initiative, <https://www.nti.org/analysis/articles/cns-global-incidents-and-trafficking-database/>

education and training, and 3) creating partnerships with government bodies which license and regulate civilian use of radioactive materials.

#### Promoting dialogue between various stakeholders

Security of radioactive sources and prevention of the RDD threat are in the interests of all IAEA member states. Given the conception that the nuclear security is a state responsibility, an organization like CNS does not strive to enforce such responsibility. Yet, it has been successful in bringing together various national government stakeholders responsible for implementing nuclear security measures in their countries and promoting a dialogue between them on both national and international levels. The Center hosted or participated in several Track 1.5 and Track 2 dialogues to engage various government bodies and operators in discussions on effective nuclear security policy. CNS hosted a series of workshops for various governmental and nongovernmental stakeholders exploring the substitution of non-isotopic alternatives for high-risk radiological sources. These included workshops on cesium chloride in blood irradiators (Washington D.C.), cobalt-60 in external beam cancer radiation treatment (Johannesburg, South Africa), liability for misuse of radiological sources (London), and a roadmap for the substitution of non-isotopic alternatives for high-risk sources (Vienna).

Such meetings are usually attended by a broad range of government officials, state regulatory bodies, public health and industry representatives, scholars and other parties responsible for implementing nuclear security measures and strengthening nuclear security system.

#### Building national capacities through education and training

Effective national nuclear security programs require robust national capacities and a well-trained workforce, from scientists to guards. IAEA member states recognize the need for highly skilled specialists and the importance of providing such training at both university and professional levels. To meet the need for capacity building in countries with established nuclear programs, as well as newcomers, the IAEA maintains two networks: the International Nuclear Security Network (INSEN) and the International Network for Nuclear Security Training and Support Centres (NSSC Network). Comprised of experts from IAEA member states, the INSEN network supports nuclear security education at academic and research institutions/universities, while the NSSC network is geared towards on-the-job and other professional training.

Establishment of INSEN is another indicator of the prominence that academic and research communities have in helping member states in establishing effective nuclear security programs. CNS was among the first organizations to be accepted to INSEN and one of its experts has been a member of a core group involved in the establishment of this network.

In the past five years, CNS has conducted or co-hosted several nuclear security capacity building courses and workshops in Ghana and Vienna. Three Ghana courses on nuclear security and nonproliferation were co-hosted with another INSEN member, the African Centre for Science and International Security (AFRISCIS); one of these courses was also organized in the partnership with the UK government. Audiences at the Ghana courses included technical personnel, government officials, national regulatory authorities, university professors, and other participants from more than a dozen countries in Africa. One of these courses focused on African women practitioners in the nuclear sector. The next course for Women in STEM in Africa will

be co-hosted with an INSEN member from Morocco, and in the partnership with the Norwegian government. The course is scheduled to take place in Morocco in March 2020.

Aside from building nuclear security capacities, such courses also help build trust and partnerships between CNS and government stakeholders which receive such training.

There is another form of training which CNS offers to government officials from developing countries under the auspice of the semester-long CNS Visiting Fellows Program or other shorter-term customized training programs. A number of nuclear security experts from respective government bodies benefited from training at CNS and Middlebury Institute of International Studies. These included representatives from nuclear regulatory bodies and other related agencies from Georgia, Malaysia, [Republic of Moldova](#), Kazakhstan, Nigeria, Pakistan, Tajikistan, Ukraine, and Uzbekistan (the latter is being a nuclear newcomer). Each of these individuals, depending on his/her level of expertise, received a customized training, combining substantive knowledge and job-performance skills, including English language proficiency. Some experts from Georgia, [Republic of Moldova](#), and Malaysia were introduced to new methods in searching for orphan radioactive sources, such as network analysis, geospatial analysis, and other innovative online technologies which can be used to complement national regulatory bodies efforts in securing orphan and legacy radioactive sources. Such specialized training was offered to experts from Georgia, [Republic of Moldova](#), and Malaysia. Another expert from Uzbekistan received not only substantive but also basic English language training. As a nuclear newcomer, Uzbekistan is actively involved in various IAEA programs aimed at building capacities in member states pursuing peaceful nuclear energy. English language proficiency is a very important skill which many technical experts lack. Training experts from nuclear newcomer countries using a Content and Language Integrated learning approach will help them better integrate in the international nuclear community.

### Creating partnerships with government bodies

NGOs can also enhance national radiological security efforts by partnering with government agencies. These partnerships allow government agencies to leverage NGO's unique skills and expertise to strengthen radiological security in ways which might otherwise be unavailable to them. These partnerships would also benefit government agencies through division of labor, while the NGO pursues novel and innovative methods, the agency is free to continue its routine duties. However, these partnerships are collaborative efforts, strong communication between the government partner and the NGO is required to ensure project success.

Five main features of a successful partnership are time efficiency, meeting project goals, end user and project team satisfaction, and project sustainability. The effective implementation of these features requires two things: close collaboration between the partners, and motivated partners. Collaboration ensures that effort is not wasted pursuing unnecessary paths. It also ensures that the project is being pursued in a way that satisfies the end user and will meet project goals. The NGO provides feedback to the government partner regarding project possibilities and feasible goals, while the government partner sets the desired results, helps develop the action plan, and provides feedback on the design of project aspects. The government partner is also involved in implementing or applying parts of the project.

Motivation ensures that efforts on one side are reciprocated by the other. A tool or service provided by an NGO is only useful if the partner agency actually uses it. If the partner agency is

not active in collaboration, the resulting products may not be useful for the given situation. Similarly, a less committed NGO team will only produce mediocre results of marginal use to a partner, and failure to communicate by the NGO could lead to funding problems or overpromising. While partnerships do support time efficiency through a division of labor, they are still an active, collaborative process. Most importantly, such collaborations are usually cost free to governmental agencies.

In 2016, CNS partnered with the Moldovan National Agency for Regulation of Nuclear and Radiological Activities (NARNRA). One of NARNRA's responsibilities includes locating and securing Soviet-era legacy and orphan radioactive sources. Given NARNRA's small size and breadth of duties – including routine inspections, training duties, and field exercises – staff had little time to conduct research on Soviet legacy facilities. NARNRA partnered with CNS to strengthen radiological security by applying new tools to track down information on the use of radioactive sources at legacy sites. For the purposes of this paper, the authors define “new tools” to be tools and methods empowered by new forms of data and analysis enabled by the Internet and social media, such as geospatial analysis, open source research, social media and network analysis, and online surveys.

CNS took a multi-step approach to this task, consulting with NARNRA at each step to ensure that both parties agreed to the process, and that the desired results could be achieved. Beginning with a list of facilities which NARNRA believed to use or have used radioactive sources, the CNS team researched information on each facility, such as size, type of activity, and operational status. This data formed parameters for social media searches, which were used to populate a database of current and former employees of the facilities. An online survey in three languages (Romanian, Russian, and English) was designed to systematize data collection and was sent to people in the database as well as facility operators. A variant of this survey was also made for field use, to help inspectors organize data collection during inspections. This variety of approaches allowed CNS and NARNRA to quickly test different methods, moving from less successful methods to more successful alternatives. Guidance for the work was drawn from a variety of sources, including IAEA SSG-19 (*National Strategy for Regaining Control over Orphan Sources and Improving Control over Vulnerable Sources*), IAEA-TECDOC-804 (*Methods to identify and locate spent radiation sources*), and IAEA-TECDOC-1388 (*Strengthening control over radioactive sources in authorized use and regaining control over orphan sources*).

Ensuring sustainability – that both parties continue to benefit even after a project's conclusion – is an important part of a successful partnership. As part of this project, a member of NARNRA was brought to CNS for an intensive training on new tools and methods. Since returning to the Republic of Moldova, he has continued to apply this training in new and innovative ways. In total, this project has contributed to the discovery of more than 600 orphan low-level activity (IV-V category) sources, as well as two enterprises that use radioactive sources, which regulators were not previously aware of. Use of surveys has increased NARNRA's awareness of different source applications, and new tools have broadened the research methods available to regulators.

CNS partnered with the Agency of Nuclear and Radiation Safety (ANRS) of Georgia in 2017-2018 with similar goals. The methodology applied was similar to that used for Moldova, involving geospatial analysis, open source and social media research, network analysis, and

surveys. Additionally, CNS leveraged its skills by providing research services on newly-located soviet era facilities. CNS brought a member of ANRS to Monterey as a visiting fellow. He was also involved in determining project stages and generating ideas. On return to Georgia, he served as a point of contact, and engaged in project implementation.

In 2018 and 2019, CNS worked with the government of Uzbekistan to determine the viability of applying the CNS methodology in that country. The CNS team, with the support of its Moldovan colleague, discussed project methods and results with several Uzbek agencies. In support of these discussions, a representative of the Uzbek State Committee on Industrial Safety was brought to Monterey to participate in an intensive English language and nonproliferation fellowship. Developing a partnership, is in a way, a partnership of its own.

In 2019, CNS partnered with the Malaysian Nuclear Agency (Agensi Nuklear Malaysia) to develop methods to measure the nuclear security culture among industrial radiography providers in Malaysia. Due to its strong economy, Malaysia has a burgeoning industrial radiography industry. Nuklear Malaysia, which is responsible for training radiographers, desired to address concerns regarding source loss and theft, especially during transport. The Malaysian Nuclear Agency and CNS formed a partnership for the purpose of applying new tools to accomplish this goal.

A representative of Nuklear Malaysia took part in the CNS visiting fellows program. The CNS team collaborated with her to develop an action plan and set project goals. Again, CNS researchers used a variety of approaches. Open source research was used to study information about Malaysian radiography providers, and geospatial analysis was applied to locate them. Using this information, the CNS team was able to learn about route planning needs, bottlenecks and other potential issues for source transport. The CNS team also worked with their Malaysian colleague to develop a survey, to be distributed to industrial radiography operators. The survey was designed using information from a variety of sources, including IAEA Nuclear Security Series 28-T (*Self-assessment of Nuclear Security Culture in Facilities and Activities*). The survey was translated into Bahasa Malaysia, and will be distributed by Nuklear Malaysia through a professional association for industrial radiographers.

## Conclusion

This paper attests to the constructive collaboration between various nongovernmental and governmental stakeholders working in the field of nuclear and radiological security. Specific and unique country examples of partnerships between CNS and the National Agency for Regulation of Nuclear and Radiological Activities of the Republic of Moldova, and CNS and Malaysian Nuclear Agency, as well as evolving partnerships with Georgia and Uzbekistan, were given to support the paper's hypothesis about the role an NGO can play in the nuclear and radiological security domain. These partnerships have a potential to be sustainable and cost-effective measures in strengthening control of radioactive sources and observing the *IAEA Code of Conduct on the Safety and Security of Radioactive Sources* by member states. Projects under these partnerships were developed using IAEA guidance and other reference materials.

As a result of such partnerships, several hundred low-activity orphan and legacy sources were recovered in Republic of Moldova. In Malaysia, the partnership focused on strengthening

transportation security of industrial radiography sources through enhancing security culture of Non-Destructive Testing operators.

In addition, governments' partnerships with CNS at the Middlebury Institute of International Studies which is a private research and academic institution, have a capacity-building dimension as they provide opportunities for experts from member states, including nuclear newcomers, with on-the-job training and enable them to acquire "know-how," skills and thinking which they would not be able to develop otherwise due to their demanding schedules and limited resources. This was remarkably demonstrated during the CNS collaboration with Moldovan and Malaysian partners. Moldovan colleagues not only acquired these skills, but took them to another level and expanded their radioactive sources recovery methods beyond the original methodology introduced by CNS. Malaysian colleague has learned how to develop an online survey which can be applied to various audiences that her agency trains and how satellite and aerial images can help in transportation security assessments.

The CNS partnerships, with other countries, including Georgia and Uzbekistan, are still evolving. Nonetheless, representatives from these countries have already received on-the-job training and skills which they all regarded as helpful in their careers.

Of course, the same partnership model cannot be replicated in every country. Each country requires a customized and unique approach. The concept of an NGO is perceived and interpreted differently by different countries. Some states are less susceptible to engaging non-governmental actors in the nuclear security sector due to the sensitive nature of the field. One of the arguments commonly used by opponents of such engagement is the lack of accountability, as NGOs cannot be held accountable for the information they obtain through their collaboration with government entities and how they use this information. Another concern is that non-governmental institutions do not have necessary expertise, technical capabilities, or experience. Finally, another grave misperception is that NGOs want to criticize, influence or change governmental bodies responsible for nuclear security. These misunderstandings are roadblocks to building successful partnerships between nongovernmental and governmental entities. Most reputable research and academic institutions which are not tied to any governments, are striving to complement, and not impede, national efforts in strengthening nuclear and radiological security.

To conclude, the authors who represent both the nongovernmental entity and governments, believe that one way to remove such roadblock is through changing these misperceptions by creating awareness and sharing successful examples of cooperation, wherever it is possible, at various international forums for various stakeholders, including IAEA conferences and other member state meetings.