

REGIONAL TOOLS TO STRENGTHEN NUCLEAR SECURITY: THE MIDDLE EAST

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The Nuclear Security Summits (NSS) brought high-level attention to nuclear security and created tools for cooperation. Despite this achievement, the threat of nuclear terrorism is not diminishing, especially in the Middle East. Among the ongoing, devastating wars, failed states, WMD arsenals, use of chemical weapons, and terrorist activity, there is an evident need for a Middle Eastern security architecture. Its development, however, is hindered by political conflicts. Nevertheless, there exist successful mechanisms that regional states have developed to enhance cooperation against radiological and nuclear threats.

The International Atomic Energy Agency (IAEA) broadly defines nuclear security as “security of nuclear materials and the facilities that house them.” Given that risk environments can best be assessed at the regional level, this short paper explores the existing and potential regional tools, e.g., conferences, meetings, organizations, institutions, networks, etc., in the Middle East and examines their current and potential role in strengthening nuclear security.

These mechanisms instill some degree of trust and confidence among regional stakeholders through practical items of cooperation that do not infringe upon the sovereignty and national security of states.

I. Regional Tools That Play a Role in Nuclear Security

a. Tools Created by the Nuclear Security Summit (NSS) Process

Five Middle East/Gulf participants, Egypt, Israel, Jordan, Saudi Arabia, and the United Arab Emirates (UAE), participated in the high-level NSS process between 2010 and 2016.

At the 2012 Nuclear Security Summit in Seoul, Jordan introduced the counter-nuclear-smuggling “gift basket,” or set of commitments that states present as gifts to overcome less ambitious language in consensus documents. The gift basket concept presented an opportunity to coordinate efforts from within the region in a way that recognizes the political realities and security challenges unique to the Middle East.¹ Fourteen countries pledged to make resources available and share lessons learned for capacity-building in counter-nuclear-smuggling. As a follow-on, in September 2013, a counter-nuclear-smuggling team led by the Jordanian Armed Forces was established.

As the NSS process concluded in 2016 in Washington, D.C., the final action plan identified Interpol’s Radiological and Nuclear Terrorism Prevention Unit as the leading authority on radiological and nuclear terrorism. Regional delegations from the Middle East would cooperate with Interpol, the newly established Nuclear Security Contact Group (NSCG), and the Global Initiative to Combat Nuclear Terrorism

* The views expressed are the author’s and do not necessarily reflect those of CRDF Global.

¹ <https://thebulletin.org/roundtable/what-path-for-nuclear-security-beyond-the-2016-summit/>

(GICNT) to follow up on the states' summit commitments to ensure that the work of the summits will not be abandoned.

The Nuclear Security Contact Group (Contact Group or NSCG) The NSCG is not a decision making body, but rather meets twice a year to discuss issues related to strengthening the global nuclear security architecture. Recent areas of focus have been on the 2021 review conference for the Amended Convention on the Physical Protection of Nuclear Material and strengthening the IAEA's nuclear security role.² There is no formal consensus on positions.

Canada was the first country to assume leadership of the Contact Group. In terms of Middle Eastern participation, Israel, Jordan, and the United Arab Emirates have been original NSCG members since its establishment in 2016, and Qatar joined in July 2018. NSCG's current membership includes 48 countries and four international organizations.³

Jordan chaired the Contact Group from 2017 to 2018. The Jordanian government identified the main threats as the security of nuclear and radiological facilities, the smuggling of material through official crossing points and across green borders, and the use of radiological dispersal devices.⁴

b. Tools Created by the European Union and United Nations (UN)

Launched in 2010, the **European Union (EU) Chemical, Biological, Radiological, and Nuclear Risk Mitigation Centers of Excellence (CBRN CoE) network** is an initiative funded by the European Commission and the United Nations Interregional Crime and Justice Research Institute (UNICRI). The EU CBRN CoE network has two regional secretariats in the Middle East: one in Amman that serves the whole region and one in Abu Dhabi that focuses on the Gulf Cooperation Council (GCC) countries. The network supports the development and implementation of CBRN risk mitigation strategies. Partner countries include the United Arab Emirates, Iraq, Jordan, Lebanon, Qatar, and Saudi Arabia. The partner countries appoint national teams that report to the regional centers. The centers are designed to then address the gaps in technical capacity, equipment, and training, utilizing international resources.⁵ They liaise with partner countries and organize regional roundtable meetings in an "apolitical space."⁶ They also communicate with the Joint Research Centre of the EU Commission in Brussels.

The network requires partner countries to establish the aforementioned national CBRN Teams to oversee the development of national assessment processes and plans.⁷ These teams include non-security agencies, e.g., Ministry of Health, NGOs, universities, and think tanks.

² "NSCG/Nuclear Security Contact Group: The Terms of Reference." <http://www.nscontactgroup.org/terms-of-reference.php>

³ <http://www.nscontactgroup.org/members.php>

⁴ Jasmine Auda, "Jordan's Chairmanship of the Nuclear Security Contact Group: Sustaining Progress on Nuclear Security in the Context of CBRN Challenges" Academic Peace Orchestra Middle East, Policy Forum, No: 4, March 2019.

⁵ Francesco Marelli and Marian de Bruijn, "CBRN Centers of Excellence: A Networking Approach Towards CBRN Risk Mitigation," IAEA, 2010, <https://www.iaea.org/safeguards/symposium/2010/Documents/PapersRepository/199.pdf>.

⁶ Nasser bin Nasser.

⁷ Nasser bin Nasser, "The European Union's Centers of Excellence Initiative on CBRN Risk Mitigation: Innovative Approaches for the Disruptive Security Environment," Academic Peace Orchestra Middle East, No: 6, June 2019.

In September 2012, the center of excellence in Amman became the first operational regional secretariat at the **Middle East Scientific Institute for Security (MESIS)**.⁸ MESIS regularly hosts seminars to promote regional cooperation on strengthening nuclear security culture. One of the most unusual aspects of MESIS has been its ability to overcome the Western-centric narrative on nuclear security by bringing in regional and local perspectives and holding events in the region.⁹

Another recent development is the **Radiation Detection Training Center**, located in Amman and established by MESIS. “It was created with the primary objective of providing the technical knowledge and practical skills necessary for stakeholders from across the region to counter the threat posed by radiological and nuclear materials.” Jordan also has a **National Center of Nuclear and Radiological Security** at the Energy and Minerals Regulatory Commission (**EMRC**). The EMRC has a directorate for nuclear safety, security, and emergency, under which there is a section for nuclear security and emergency.¹⁰ The EMRC is responsible for the design and implementation of the regulatory framework, comprehensive national threat assessment, and coordination for emergency response.

The **Inter-Arab Nuclear Detection and Response Exercise, FALCON**, in February 2016, in Abu Dhabi was the first inter-Arab nuclear detection and response exercise. It aimed at promoting regional approaches and encouraging information sharing related to the detection and initial response to radiological and nuclear threats. The exercise was organized by the EU CBRN CoE Initiative and UNICRI, in partnership with the United Arab Emirates, the Hashemite Kingdom of Jordan, the Kingdom of Morocco, the European Commission, and GICNT.

During the three-day workshop and tabletop exercise featuring a nuclear simulation drill, more than two hundred participants from the Arab states of the Gulf, Jordan, Morocco, and international organizations such as the European Commission and the GICNT discussed the establishment of an inter-Arab network and formed national teams aimed at building capacity in radiological and nuclear threat mitigation, detection, forensics, and initial response.¹¹ This network would strengthen regional cooperation in nuclear forensics among regional experts. The IAEA and the World Customs Organization attended the exercise as observers, while Finland and Australia, the GICNT Nuclear Detection and Nuclear Forensics Working Group chairs, and the Netherlands, the GICNT Implementation and Assessment Group coordinator, attended as subject matter experts.¹²

One coordination project by the aforementioned group that followed the FALCON exercise is **Strengthening Responses to Nuclear Security Events in the Gulf Cooperation Council Countries**, with the sponsorship of the Emirates and Saudi Arabia (CBRN CoE partner countries) and the participation of

⁸ “Launch of the CBRN Centre of Excellence,” Middle East Scientific Institute for Security (MESIS), September 6, 2012, <http://www.mesis.jo/news/207>.

⁹ Nasser bin Nasser, Jasmine Auda, and Katherine Bachner, “Cultural Awareness in Nuclear Security Programs: A Critical Link,” *International Journal of Nuclear Security* 2, no. 1 (2016): 3.

¹⁰ https://www-ns.iaea.org/downloads/ni/safety_convention/7th-review-meeting/jordan_nr-7th-rm.pdf

¹¹ Ali H. Al-Madfaei, “Exercise FALCON: The First Inter-Arab Nuclear Detection and Response Exercise,” IAEA International Conference on Nuclear Security: Commitments and Actions, Vienna, Austria, 2016.

¹² “EU Chargé d’Affaires Gives a Keynote Speech at the Launch of the Inter-Arab Nuclear Detection and Response Exercise,” Delegation of the European Union to Montenegro press release, February 26, 2016, https://eeas.europa.eu/headquarters/headquarters-homepage_en/8366/EU%20Chargé%20d%27Affaires%20a.i%20Gives%20a%20Keynote%20Speech%20at%20the%20Launch%20of%20the%20Inter-

Bahrain, Jordan, Kuwait, Morocco, and Oman.¹³ The project seeks to build expertise in localization of radioactive or nuclear material, categorization, development of national nuclear response plans, methods for collecting and processing contaminated evidence, acquisition of equipment, and training. The emphasis is on enhancing national and regional interagency coordination and cooperation.

c. Tools created by the IAEA

The IAEA Code of Conduct on the Safety and Security of Radioactive Sources (IAEA/CODEOC/2004) is the most comprehensive, international tool which addresses the deliberate acquisition of radioactive sources for malicious use. Additionally, the IAEA has established regional technical assistance programs to promote cooperative research, training, development, and applications in nuclear science and technology.

Cooperative Agreement for Arab States in Asia for Research, Development and Training related to Nuclear Science and Technology (ARASIA) initially entered into force in July 2002, replaced by the 2017 ARASIA Agreement adopted in Vienna, Austria.¹⁴ The main objective of ARASIA is coordination of activities with the IAEA for training, research and development, and application of nuclear science and technology, to be implemented by national institutions. Each participating state assigns a scientific national coordinator to the technical working group.

ARASIA has two Regional Resource Centers (RRCs): The **Kuwait Cancer Control Centre and the American University of Beirut Medical Centre**, designated in November 2018.¹⁵ The RCCs are expected to enhance human resources, institutional capacity, and quality control in the testing of nuclear medicine equipment.

The **Arab Network of Nuclear Regulators (ANNuR)** was created in 2010 under the IAEA Global Nuclear Safety and Security Network to strengthen the nuclear safety and security regulatory infrastructure in its 22 members in the MENA region.¹⁶

The IAEA has also overseen research in the region. **SESAME Project** stands for “Synchrotron-light for Experimental Science and Applications in the Middle East.” It is a multilateral advanced research center situated some 35 km north of Amman, located at the Jordanian Royal Scientific Society, under the auspices of the IAEA and the UN Educational, Scientific and Cultural Organization (UNESCO). It involves researchers from Israel, the Palestinian National Authority, Bahrain, Egypt and Turkey. A very large

¹³ Al-Madfaei, “Exercise FALCON.”

¹⁴ “The Text of the 2017 Co-operative Agreement for Arab States in Asia for Research, Development and Training related to Nuclear Science and Technology (ARASIA),” IAEA Information Circular, INFCIRC/929, August 15, 2019, at: <https://www.iaea.org/sites/default/files/publications/documents/infcircs/2019/infcirc929.pdf>

¹⁵ Claire Karle, “Celebration of ARASIA Regional Resource Centres in Nuclear Medicine,” IAEA, December 13, 2018, at: <https://www.iaea.org/newscenter/news/celebration-of-arasia-regional-resource-centres-in-nuclear-medicine>

¹⁶ The ANNuR Member States are Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates and Yemen. https://gnssn.iaea.org/main/ANNuR/SiteAssets/CoreDocuments/GNSSNFactsheetANNuR_rev.pdf

particle accelerator that generates x-ray and ultraviolet light beams, intended for use in research in medicine, physics and other fields.

d. Regional Institutions

The Arab Atomic Energy Agency is “an Arab scientific organization and one of the Arab League subsidiary organizations with an independent identity. The Agency is concerned with peaceful uses of nuclear energy, including development and technological applications. The main role of the organization is to coordinate Arab states in peaceful applications of the atom, and to assist in research activities, manpower development, and technical and scientific information. It seeks to set up unified regulations for radiological protection and safe handling of radioactive materials, and to coordinate scientific and technical activities with concerned regional and international organizations. It supports and protects the patents in the peaceful uses of atomic energy, encourages Arab scientists in the field of nuclear sciences and technologies, and assists them in attending relevant Arab conferences.”¹⁷

Gulf Nuclear Energy Infrastructure Institute (GNEII) is an educational and research entity that resulted from the strategic partnership between the UAE government and U.S. stakeholders, including the U.S. Department of Energy National Nuclear Security Administration (NNSA), and Sandia National Laboratories (SNL).¹⁸ Established in 2011 and hosted at Khalifa University in Abu Dhabi, its mission is to institutionalize nuclear safety, security, and nonproliferation norms for future Gulf decision makers in nuclear energy programs through professional development. As part of the curriculum, GNEII offers nuclear security modules on physical protection and vulnerability assessment for nuclear facilities. It also oversees capstone projects and technology demonstrations on nuclear safety and security.¹⁹

An example of successful regional cooperation by GNEII is the program established at Khalifa University in the Emirates to provide technical capabilities for the adjudication of radiation alarms at **Khalifa Port** and other radiation portal monitors.²⁰ As part of the project, radiation detection personnel will request “reachback”—a process in which they contact nuclear and engineering scientists for assistance when they detect unusual radionuclides, such as radioactive isotopes, or malicious material, such as highly enriched uranium or plutonium on their HPGE radiation portal monitors. Khalifa University will train a multiorganizational team of experts in radiation detection and have a minimum of two on-call reachback scientists available at all times. The team at the port will be able to contact the mobile expert support team in case of a confirmed detection of an illicit source. This approach contributes to enhancing regional human capital through the collaboration of academia, governmental organizations, and industry.

Co-sponsored by the Arab Institute for Security Studies (ACSIS) and the Nuclear Threat Initiative (NTI), the **Nuclear Forum** promotes publications on nuclear security and nonproliferation in the Arab world.²¹

¹⁷ Mohamed I. Shaker, “Nuclear power in the Arab world & the regionalization of the nuclear fuel cycle: an Egyptian perspective,” *Daedalus*, Winter 2010.

¹⁸ The Gulf Nuclear Energy Infrastructure Institute (GNEII), at: <https://www.osti.gov/servlets/purl/1375289>

¹⁹ See examples of GNEII projects and grants at: <https://www.ku.ac.ae/gulf-nuclear-energy-infrastructure-institute/#1536819664040-73b2bf4b-e75e02fa-3dc79dab-ea18eca7-c467>

²⁰ Braden Goddard, Alexander A. Solodov, and Patrick J. Simmons, “Khalifa University Reachback Program Supporting Prevention of Illicit Nuclear and Radiological Material,” *International Journal of Nuclear Security* 2, no. 1 (2016): 66–75.

²¹ Arab Institute for Security Studies, at: <https://acsis.org/NF/about-nf>

Its annual meeting attracts government officials, experts, academics, and students. Nuclear security is generally not the focus (only one or two panels). The conference tends to focus on nuclear energy and political issues in the Middle East. In addition to the Nuclear Forum, ACSIS also hosts the Amman Security Colloquium.

There are also nuclear industry conferences in the extended region, including the **Annual Nuclear Construction Conference**, MENA, organized by Nuclear Energy Insider; and the **Nuclear Power Summit** in Istanbul.

II. Existing Regional Tools That Do Not Currently Play a Strong Role in Nuclear Security, But Could

The regional political organizations that could possibly play a stronger role in nuclear security are **the League of Arab States (LAS), the Gulf Cooperation Council (GCC), and the Organization of Islamic Cooperation (OIC).**

It is clear that political collaboration in the Middle East is extremely challenging. Even among the GCC states, the December 2006 call for a joint program in nuclear technology has not been fully implemented. Both LAS and the GCC could, however, play a stronger role in regional arrangements to build awareness and understanding of the importance of nuclear security as a benefit to peaceful uses of nuclear energy.

The ultimate establishment of a Weapons of Mass Destruction Free Zone in the Middle East (WMDFZME) was a goal set forward at the 1995 Nuclear Nonproliferation Treaty Review Conference. Throughout the pursuit of a WMDFZME, LAS, under Egypt's leadership, has focused its efforts on formulating the Arab position against Israel. Israel has long argued that regional security talks should come first. However, given the political complexities around nonproliferation regime participation in the region, the future of the WMDFZME discussion remains uncertain. This uncertainty puts the region at a greater security risk given the increased number of planned nuclear power plants. As the most active advocate of WMDFZME, LAS could instead bring high-level political attention to nuclear security at international fora.

Similarly, the GCC is in a good position to formulate an Arab strategy for nuclear security, given the "gold standard" that the UAE promotes in nuclear power programs. Possible partners would include LAS and Khalifa University from academia. Since all GCC members are members of the IAEA, a high-level GCC meeting under the auspices of IAEA could be dedicated to nuclear security.

It is not uncommon for religious authorities to be involved in matters of public policy, especially through moral convictions.²² From this aspect, the OIC, as the collective voice of the Muslim World, could generate programs specific to nuclear security in its Science and Technology department.²³

²² See, for instance, the nuclear risks sections in the "Faith and Global Policy Challenges" project at the University of Maryland: https://cisssm.umd.edu/sites/default/files/2019-07/faith_and_global_policy_challenges__final.pdf

²³ https://www.oic-oci.org/dept/?d_id=7&d_ref=6&lan=en

III. Supplemental International Cooperation at the Regional Level under the auspices of International Organizations

Extra-regional organizations play a key role in strengthen nuclear security and promote awareness, attention, and capacity building at the regional level in the Middle East.

These organizations include, but are not limited to the **Organization for Economic Cooperation and Development (OECD)**, the **Nuclear Energy Agency (NEA)**, and nuclear industry organizations such as the **World Association of Nuclear Operators (WANO)** and the **World Nuclear Association (WNA)**. These international organizations provide supplemental international cooperation at the regional level.

In addition to their regional efforts previously listed, the IAEA supports collaboration, education, and research through its International Nuclear Security Education Network (INSEN) and the International Network for Nuclear Security Training and Support Centres (NSSC Network).

The International Nuclear Security Education Network (INSEN) is a partnership established under the auspices of the IAEA. Membership is open to any educational or research institute involved in nuclear security education.

INSEN's three working groups focus on:

- development and maintenance of educational materials, tools and methodologies
- program, curriculum and faculty development
- knowledge management and promotion of nuclear security education and INSEN.²⁴

INSEN utilizes the IAEA Nuclear Security Information Portal (NUSEC) and has 181 members in 64 states.

INSEN members in the Middle East are 1 university in Bahrain, 11 universities in Egypt, 2 members in Iraq, including the Iraqi Radioactive Sources Regulatory Authority, 5 institutions in Jordan including MESIS, 2 members in Lebanon including the Lebanese Atomic Energy Commission, the Ministry of Foreign Affairs of Oman, 3 universities in Saudi Arabia, 2 universities in UAE, and 1 university in Yemen.²⁵

Under the **IAEA's International Network for Nuclear Security Training and Support Centers (NSSC Network)**, several states in the region have developed or are developing NSSCs, e.g. Lebanon, Jordan, and Egypt. The NSSC Network however, is international in nature and lacks any tailored, regional focus.

Another key mechanism with regional reach is the **Global Initiative to Combat Nuclear Terrorism (GICNT)**. GICNT is a multinational, voluntary partnership committed to preventing, detecting, and responding to nuclear terrorism, launched in 2006 by United States and Russia. Partner nations organize and host workshops, conferences, and exercises to share best practices around the implement the GICNT Statement of Principles. The GICNT partners in the Middle East are Bahrain, Israel, Jordan, Libya, Morocco, Saudi Arabia, and the UAE."²⁶ In June 2010, the GICNT Plenary Meeting convened in Abu Dhabi, United Arab Emirates.

²⁴ <https://www.iaea.org/services/networks/insen>

²⁵ IAEA Nuclear Security Information Portal, (NUSEC), member access only: nusec.iaea.org

²⁶ Mark Fitzpatrick, "Promoting nuclear safety and nuclear security in the Middle East region," EU Nonproliferation Consortium, Background Paper, November 2012.

Finally, the *World Institute for Nuclear Security (WINS)* organizes operators' workshops to discuss and publish best practices, to provide certified training for nuclear security managers through the WINS Academy. More than 90% of participants say they have changed security practices as a result of what they learned from WINS.²⁷

IV. Regional Tools That Could Be Created

Several countries in the region, including Egypt, Iran, Jordan, Kuwait, Qatar, Saudi Arabia, Turkey, and the United Arab Emirates, see nuclear energy as a long-term solution to their dependence on fossil fuel, often called the "nuclear renaissance." The proliferation of civilian nuclear energy programs that lack adequate safety and security measures is a major, upcoming concern for the Middle East.

According to both the 2016 NTI Nuclear Security Index and the 2018 NTI Nuclear Security Index, the Middle East and North Africa region ranked poorly in their nuclear security conditions in terms of the risk of theft of nuclear materials and sabotage of nuclear facilities.

In the 2018 NTI Index, four out of five countries with the lowest score for their risk environments are from the Middle East, Iraq, Libya, Syria, and Yemen.

There is an imminent need to address the real risks of nuclear terrorism and theft and the need to improve physical protection and local nuclear security expertise. The principles that all regional parties need to address at the national level and should seek to attain through cooperative mechanisms and tools at the regional level include:

- A human resources development plan and recruitment of trained personnel to support these emerging nuclear energy programs in order to try to overcome the "regulator-operator information asymmetry"
- Establishment of information sharing mechanisms between intelligence agencies and law enforcement agencies at the national and regional levels
- Establishment of national registers of radiological and nuclear materials, identifying the gaps in national legislation and criminal codes, developing measures to detect radioactive materials, and establishing standards and sharing best practices for securing these materials' sources with a view toward regional capacity-building.

Possible tools to improve nuclear security awareness, dialogue, and cooperation in the Middle East could include:

- The development of a Middle East action plan for prevention, detection, preparedness, and response could be inspired by the EU CBRN Action Plan, potentially coordinated with EU CBRN CoE and implemented by national CBRN teams²⁸
- A region-wide online platform/portal to share best practices in combatting CBRN terrorism through physical protection

²⁷ World Institute for Nuclear Security, at: <https://wins.org/wins-academy/>

²⁸ Nilsu Goren and Bilal Saab, "The Middle East's Next Big Challenge: Nuclear Security," *The American Interest*, November 30, 2017, at: <https://www.the-american-interest.com/2017/11/30/middle-east-s-next-big-challenge-nuclear-security/>

- Establishment of a border security cross coordination center among regional states as a ways of building confidence, with close collaboration with the U.S. Department of State and possibly Sandia National Laboratories
- Creation of comprehensive national plans for the transportation and storage of spent fuel and radioactive waste for nuclear newcomers, in cooperation with the IAEA
- Creating a permanent, regional radiological and nuclear security center to bring together regional delegations regularly to discuss issues particular to their interests. Given Jordan's active role in the nuclear security dialogue, enhancing the institutional capacity in the Jordanian efforts could be an asset.
- Creating a regional expert group on nuclear security, to be supported by international networks such as INSEN.

Given the ongoing wars and complexity of conflicts and terrorist activity, states in the Middle East/Gulf should consider practical measures to address the technical necessities to implement nuclear security measures and consider organizational aspects of the institutions that will accommodate these efforts. Aiming to address regional security through an overarching regional weapons-of-mass-destruction-free zone (WMDZME), a goal shared in principle by all governments in the region, has not succeeded to bypass political agreements. The emphasis on nuclear security would allow the governments to shift away from nonproliferation regimes and focus on the common terrorism threat. This focus would also contribute to the control of nuclear materials, minimizing of insider threats, and measures to eliminate the risk of inadvertent access to existing and upcoming nuclear facilities in the region.