# Centers of Excellence – Institutional Approach to Promotion of Nuclear Security Culture

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## Introduction

The Nuclear Security Summit (NSS) process has not only helped raise the level of awareness about the significance of nuclear security it has also sensitized the leadership at the highest political levels in key countries and multilateral organizations of the need to achieve highest possible standards of nuclear security. As a consequence the idea of establishing Centers of Excellence (CsOE) for the promotion of nuclear security culture at national, regional and international levels has also been brought into the limelight. However, it will be unfair to ascribe the origin of the concept of CsOE to the NSS, since a few centers were already functioning even before the first NSS in April 2010, while some others were at various stages of development. These included the World Institute of Nuclear Security (WINS), which was established in 2008, the US assisted COE in Brazil and UK's announcement of its intention to set up a COE in 2009. The EU, as part of its CBRN (Chemical, Biological, Radiological and Nuclear) Action Plan had announced its COE venture in 2009, though the process of setting up these centers started in earnest in 2010. The IAEA on its part was already assisting six countries including Colombia, Ghana, Malaysia, Morocco, Pakistan and Tanzania in establishing their nuclear security centres, while a seventh centre was opened at Obninsk, Russia in 2011. IAEA's future plans include setting up seven more centres in Chile, Cuba, Turkey, Kazakhstan, South Africa, the Philippines and Jordan.[1] The NSS initiative has undoubtedly given a new fillip to the idea of nuclear security CsOE and has helped delineate their objectives, which is evident from the joint communique issued at the end of the Washington NSS in April 2010. The communique included the formulation that, "We [the Participating States]….acknowledge the need for capacity building for nuclear security and cooperation at bilateral, regional and multilateral levels for the promotion of nuclear security culture through technology development, human resource development, education, training and stress the importance of optimizing international cooperation and coordination of

assistance."[2] The statement clearly lays down the main objectives expected to be pursued by the nuclear security CsOE.

## CsOE, Prospects and Problems

The US National Nuclear Security Administration (NNSA) has described the CsOE for nuclear security as "centralized locations where a country or region can send their professionals for training in various aspects of nuclear security."[3] However, some analysts have questioned the characterization of these centres as 'Centres of Excellence' as premature, since most of these institutions are still at very early stages of evolution and do not have a proven record of achievements to justify the title.[4] Moreover, these centres do not have a uniform design and are meant to serve a variety of purposes ranging from technical training to generalised education to simply raising awareness. An alternative and probably more appropriate designation for the CsOE may be the term 'Nuclear Security Support Centres (NSSCs) employed by the IAEA.[5] Currently the centres do not follow a standardized curricula or an internationally recognized evaluation system. To address this issue, avoid duplication of effort and facilitate exchange of best practices, the IAEA organized a meeting in early 2012 which reached an agreement to weave these centres into a network to be known as 'International Network for Nuclear Security Training and Support Centres (INNSTSC). The Agency has also been assisting countries desirous of setting up centres of excellence through provision of technical assistance.[6]

The EU has already established a network of CsOE within its jurisdiction, though its centres have a wider scope and incorporate chemical and radiological aspects as well and for that reason are named as CBRN Centres of Excellence. EU is also helping in the setting up of 50 CsOE in eight different regions around the world whose activities will be coordinated through eight regional secretariats.[7] The US assistance to CsOE, on the other hand, is through bilateral arrangements with individual countries and does not aim at developing collaborative networks. The US support to the CsOE focuses on activities such as, "Physical protection, Nuclear Safeguards and nuclear Material Control and Accounting, Nuclear Forensics, Nuclear Detection Technology, Nuclear Emergency preparedness and response, and Export Controls." [8]

## The Nature and Scope of CsOE

As discussed in the preceding paragraphs the CsOE do not follow a uniform pattern in terms of their configuration, objectives and the scope of training they are intended to provide and have, therefore, been categorized into five main types as under:[9]

- Technical and Scientific centres with emphasis of training on "use, calibration and maintenance of equipment," such as Pakistan's Nuclear Security Training Centre (NSTC), Japan's Integrated Centre for Nuclear Non-proliferation and Nuclear Security (ISCN), South Korea's nuclear security centre and China's centre of excellence on nuclear security. Of these, the Chinese and the Korean centres are not operational and are at the construction stage.

- Educational centres where the scope of training covers broader aspects of nuclear security and related issues and may include some technical issues as well. These include Italy's International School on Nuclear Security and IAEA's International Nuclear Security Education Network (INSEN).

- Centres with a wider scope covering a wide array of subjects that go beyond nuclear security and safeguards and also encompass chemical and biological security such as EU CBRN CsOE, Gulf Nuclear Energy Infrastructure Institute (GNEII) and French International Institute of Nuclear Energy (I2EN).

- Centres focusing on nuclear research and development mainly to achieve commercial objectives. These included UK's nuclear security COE, which has since been abandoned, Science and Technology Centres in Russia and Ukraine and India's Global Centre for Nuclear Energy Partnership.

- Centres whose main purpose is to raise awareness of nuclear security related issues essentially within the nuclear industry. Examples of such centres are WINS and Middle East Scientific Institute for Security (MESIS).

Despite the fact that the nuclear security CsOE are mushrooming in virtually every region of the world the idea is still in its infancy and it will take some time and

effort before the centers can realize their true potential. There are some critical issues related to standardization and universally accepted evaluation system which are yet to be resolved. Since most of the centers are offering or plan to offer training courses for international participants an accreditation system has to be evolved to ensure uniformity in the standards of training being imparted.[10] There may be a need to introduce a certification system like the ISO system to ensure minimum acceptable standards of quality assurance. Another important issue pertains to sustainability which would be dependent on two factors namely the availability of requisite resources and the political will. UK's nuclear security COE is a case in point wherein the idea was abandoned as a result of change in the government.[11] Currently the level of political interest has been elevated by the NSS process but whether this level of interest would be sustainable beyond the 2016 summit, which appears at least for now to be the last of the series, is a moot point. The IAEA, whose assistance for the setting up of nuclear security CsOE predates the NSS and has the institutional and professional capacity to oversee the working of the CsOE, will have a crucial role to play in ensuring the networking, coordination, exchange of information and best practices and provision of technical support to ensure the future sustenance of the nuclear security centers. IAEA is also being viewed as the institution best suited to carry forward the legacy of the NSS process. In terms of sustainability and widening the scope of promotion of a nuclear security culture amongst the direct stake holders and beyond it has also been suggested that the CsOE need to have close linkages with educational institutions.

As many as 15 countries announced their intention to establish nuclear security CsOE during the Washington and Seoul summits but in most cases these centers are either still at the drawing board stage or are at different stages of construction and development. Pakistan, however, constitutes an interesting case study with regard to the establishment of a functional nuclear security COE. The country has long been at the receiving end of international opprobrium revolving around the security and safety of its nuclear installations and materials in the midst of a precarious internal security situation and despite all its protestations that it had taken all possible measures to ensure fool proof security the scepticism refused to die down. Though Pakistan was not among the countries that announced the setting up of nuclear security CsOE at the Washington NSS in April 2010, work was already underway with IAEA's assistance to establish such a facility. However, at the Seoul NSS in 2012 Pakistan announced the opening of its nuclear security COE,

which would conduct specialized courses in nuclear security, physical protection and personnel reliability and offered it as a regional and international hub for training.[12] It would, therefore, be pertinent here to provide a broad overview and evaluation of Pakistan's efforts in this regard, which normally remain unacknowledged, partly due to lack of effort on its part to effectively publicise such initiatives and partly because these are overshadowed by the din of negative and cynical reporting in the media. Only recently its efforts have been recognized by the NTI in its Nuclear Security Index for 2014, which declared Pakistan as a country with most improved nuclear security. As the NTI report itself indicated Pakistan could have scored even better but for the lack of publicly available information on several aspects of its efforts to enhance nuclear security.[13]

**Pakistan's Nuclear Security COE**

According to Dr Alan Heyes, "Pakistan's nuclear Security Training Center (NSTC) is one of the first IAEA nuclear security centers, … it provides a model example of what a center should be undertaking in terms of nuclear security training, provision of technical advice, and education to a state's nuclear-security-competent authorities."[14] Pakistan started implementing a National Nuclear Security Action Plan with IAEA's assistance in 2006 and continues to improve and strengthen it. Pakistan's approach to nuclear security was articulated by Ambassador Masood Khan, Pakistan's Permanent Representative to the United Nations as under:

"Our nuclear security regime is anchored in the principle of multi-layered defense for the entire spectrum of any nuclear security threat – insider, outsider and cyber threats – and is guided by the concept of *five Ds*, that is, to *deter, detect, delay, defend* and *destroy*. We have established extensive physical protection measures, robust Command and Control structures, comprehensive export controls and an effective regulatory regime to ensure safety and security of nuclear materials and installations." Ambassador Khan added that, "Pakistan has gained rich experience in the field of nuclear security. We have established a Centre of Excellence that conducts specialized courses in nuclear security, physical protection and personnel reliability. This center can be used as a regional and international hub for training."[15]

Though, Dr.Heyes has mentioned the NSTC as Pakistan's nuclear security COE, it is not the only component of the COE. There are other mutually complementary training facilities and institutions. One of these facilities is the Strategic Plan Division's Training Academy that was formally inaugurated in April 2012, and runs courses for nuclear security force personnel in protection of fixed installations, escorting of transport carrying special nuclear materials and rapid response to any nuclear related emergency. Pakistan Nuclear Regulatory Authority (PNRA) in collaboration with the IAEA is in the process of building a mock nuclear facility within the academy premises to provide realistic environment to the trainees. Besides NSTC which is supported by requisite technical laboratories, the PNRA has also established a School of Nuclear and Radiation Safety (SNRS) which provides training to the operators of nuclear plants and other radiation facilities for ensuring safe operation of such facilities. It has also established a Nuclear Safety and Security Institute (NISAS) that coordinates training in nuclear safety, security and physical protection. In addition to these facilities, nuclear safety and security has been incorporated in the curriculum of post graduate courses in nuclear reactor engineering being run by the Pakistan Institute of Engineering and Applied Sciences (PIEAS) near Islamabad. NSTC besides its direct linkage to PIEAS – a degree awarding university – also runs generalized non-technical courses for concerned government officials including the first responders in case of an emergency, to raise their level of awareness about nuclear security. The linkage with an educational institution of higher learning exposes professional scientists and engineers to the significance of nuclear safety and security at an early stage of their careers. The educational linkages, as suggested by the experts, would also help in ensuring long term sustainability of the COE and is a model for other CsOE to emulate.[16]

## Recent Developments

During an official visit to Pakistan in March 2014, the IAEA Director General Yukiya Amano besides meeting high government officials and visiting several nuclear installations, also visited Pakistan's nuclear security COE, where he was briefed about the scope of training and was shown around the training facilities. The DG IAEA remarked that, "It is very impressive that you organize training in a very systematic and operational manner."[17] Later in May 2014 an IAEA Integrated Regulatory Review Service mission comprising international experts conducted a

review of Pakistan's regulatory framework for nuclear and radiation safety and acknowledged the effective regulatory regime being pursued by PNRA. Pakistan has also over the years developed and maintained a very productive and mutually beneficial relationship with the IAEA.

Meanwhile, Pakistan's Center of Excellence for Nuclear Security (PCENS) has already conducted its first international course on 'Security of Radioactive Sources' under the auspices of the IAEA at its training academy near Islamabad. In all, thirteen participants from eight different countries underwent the five day training alongside several Pakistani experts. The main objective of the course was to enhance the understanding of the participants about radioactive sources through sharing of internationally recognised best practices. Pakistan has, thus, begun to fulfil its commitment made at the 2012 Nuclear Security Summit at Seoul. Successful conclusion of the first international course organised at PCENS in collaboration with the IAEA is a recognition of not only the quality of training facilities available at the PCENS but a manifestation of Pakistan's capacity to impart training in accordance with internationally accepted standards.[18]

With its impressive track record of capacity building in the realm of nuclear safety and security and creation of an effective regulatory regime and its substantial progress in developing training infrastructure, a large pool of trained manpower and relevant laws and regulations, Pakistan rightly deserves to be brought out of the shadows of concerns, insinuations and accusations. Acknowledgement and recognition of its efforts on part of the international community would only encourage the country to continue to improve upon the standards it has already achieved.

## Conclusion

A lot of effort and resources have been invested in the establishment of various categories of CsOE. In order to make optimal use of this investment and to gain highest possible dividends the activities of these centers would need to be harnessed through arrangements such as the INNSTSC. The IAEA, the EU and the United States as the major contributors of resources also need to coordinate and harmonize their efforts to avoid duplication of effort. Within the countries that are hosting CsOE or are planning to do so in future there would be a need to integrate

the safety and security related institutions for greater effectiveness. It will also be important to maintain the current level of enthusiasm and political commitment in order to ensure the long term sustainability of the centers. Institutionalized linkage between the CsOE and relevant educational institutions would also be critical in making the centers viable and to enable them to reach a wider audience.

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## Endnotes

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