

## Designing Nuclear Nonproliferation Security Capacity-Building Program for the Next Generation of Practitioners

EunBee PARK

Korea Institute of Nuclear Nonproliferation and Control  
ebpark@kinac.re.kr

\***Keywords:** nuclear security, capacity-building, education and training, next generation

### 1. Background

According to United Nations (UN) statistics [1], individuals aged 15 to 29 constitute 45.92% of the world's population [2].

The international community recognizes their significant figure and the importance of ensuring that the next generation holds a sound notion of world peace and security, as they are the agents in leading the future society. Meanwhile, the nuclear field faces an aging workforce, with many professionals dedicated to developing nuclear power generation approaching retirement. Unfortunately, as we are at a crucial moment of securing talented individuals as new threats to nuclear nonproliferation and security emerge, early career professionals often face difficulties pursuing their careers within this domain [3]. The International Atomic Energy Agency (IAEA)'s International Conference on Nuclear Security (ICONS) 2024 recognized this issue, launched the 'Nuclear Security Delegation for the Future' comprised of young professionals, and dedicated a session for building youth's nuclear security capacity. In this context, this paper studied and suggested a capacity-building program to be implemented by the International Nuclear Nonproliferation and Security Academy, Korea Institute of Nuclear Nonproliferation and Control (KINAC/INSA).

### 2. Methods

Capacity-building means developing and strengthening the abilities and resources of individuals or organizations to achieve their goals. This paper focuses on enhancing the capacity of individual early-career professionals.

There are various capacity-building methods [4], and each method can be appropriately adapted to fit the purpose and target group. One-time training course usually runs for a specified period for a certain number of trainees and feature instructor-led lectures, exercises, and technical visits. The cycle-based training course is a longer-term approach, often implemented annually. Job training, such as internships, provides hands-on

experience. Mentoring programs pair mentors with mentees, allowing mentors to share and pass down their experiences. Networking and community of practice build collective intelligence through the voluntary exchange of information and views.

The effectiveness of these approaches depends on the program's design and participants' willingness to engage. Thus, capacity-building program planners should choose the appropriate method based on available resources and program objectives, and they can also combine different methods within a single program as needed.

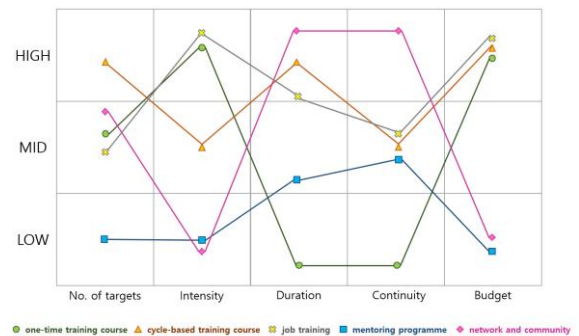


Fig. 1. Analysis of elements of capacity-building methods

### 3. Course Design

Among the approaches described above, KINAC/INSA has accumulated significant expertise in organizing one-time training courses and possesses the necessary resources to execute them effectively. Therefore, the first step can be designing a customized training course tailored to the needs of the next generation.

#### 3.1 Objectives

The course aims to encourage the next generation of the workforce to pursue careers in nuclear nonproliferation and security while also serving as an opportunity to develop into competent individuals who will effectively fulfill their duties.

### 3.2 Target audiences

The target audiences include young professionals with up to two years of work experience in government bodies or organizations involved in the nuclear field and individuals enrolled in Masters or Doctoral programs related to nuclear studies.

Many youth programs, including those of the UN, set an age limit of 32 years, typically encompassing those who have completed a four-year bachelor's, two-year master's, or five-year doctoral program and are entering the job market. However, there has been debate about whether this age limit is appropriate since many students take gap years, newer generations tend to change career paths relatively more than former generations, and women may pause their studies for maternity leave. In response to these concerns, the recently launched IAEA NSSC (Nuclear Security Support Centre) Junior Professional Programme (JPP) has no age restrictions. According to the JPP organizers, they chose to collect applications without age restrictions because many people enter the fields of nuclear nonproliferation and security from other disciplines, and for many, participating in the training and education field is also something that comes into their option, not at the very initial stage of career development.

Therefore, this course also does not have an age limit but targets individuals who are about to enter the job market as Master's or Doctoral students or those whose current organizations have recently hired.

### 3.3 Modules

KINAC/INSA organizes three to five international trainings annually, along with more than ten awareness-raising courses and regular mandatory and compulsory courses. As a result, it has developed modules on nuclear nonproliferation and security across various levels and subjects. Therefore, creating a separate module on nuclear nonproliferation and security knowledge is optional.

However, since most previous courses have been designed for regulators, nuclear facility workers, or the general public, there has not been a course specifically tailored to those starting or recently beginning careers in nuclear-related organizations.

Therefore, this course offers relevant lectures and practical exercises to enhance knowledge of nuclear nonproliferation and security and understand regulatory concepts. Additionally, it facilitates discussions to help participants recognize their motivations for participating and guide their career development. A new module will also be developed to teach practical skills that new employees need the most in the workforce—skills that are essential but have

often been left to individual competencies. On the final day, participants will complete an end-of-course assignment that integrates their newly acquired knowledge and skills into a deliverable.

Table I: A Model Training Course

| Table I: A Model Training Course |  |   |
|----------------------------------|--|---|
| Title                            | Training Course on Nuclear Nonproliferation and Security for the Next Generation of Practitioners  |   |
| Purpose                          | The course encourages the next generation to pursue careers in nuclear nonproliferation and security and is designed to provide a comprehensive knowledge of international regulatory activities.  |   |
| Trainee's qualification          | This course is open to (a) young professionals with up to two years of work experience in government and organizations involved in the nuclear-related field or (b) individuals enrolled in a master's or Doctoral program in a nuclear-related field at an accredited university. |   |
| No. of trainees                  | 20 trainees in total   |   |
| Agenda                           |  |   |
|                                  | Objective  | Module  |
| Day 1                            | Acquire a general understanding of the concept of nuclear nonproliferation and security.   | [Lecture] Introduction to nuclear nonproliferation and security – Development of international nuclear nonproliferation and security regime<br>[Discussion] Group discussion on the following topics: a) challenges of the global nuclear nonproliferation and security, b) challenges and opportunities for younger generations to pursue careers in nuclear nonproliferation and security, c) expertise and skills required for nuclear nonproliferation and security   |
| Day 2                            | Understand the concepts and practical execution of the nuclear nonproliferation and security regulatory activities.  | [Lecture] Implementing nuclear nonproliferation and security – focusing on the ways to executive regulatory activities for safeguards, export control, physical protection, and cyber security<br>[Hands-on training] Study and experiment with the devices for regulatory activities<br>[Exercise] VR – Demonstration on safeguards, physical protection inspection, force-on-force drills, etc.   |
| Day 3                            | Comprehend nuclear facilities' mechanical and operational structure and how regulation is implemented on site.   | [Visit] Visit nuclear facilities – such as nuclear power plants, fuel fabrication factories, or laboratories  |
| Day 4                            | Understanding decision-making processes and practical skills as practitioners in nuclear nonproliferation and security.  | [Lecture] Organization structure and stakeholder relations in nuclear nonproliferation and Security<br>[Lecture] Skills required to execute practical tasks – information management, data analysis, report writing, stakeholder engagement and communication, etc.<br>[Exercise] Group exercise for the following topics: a) negotiation between states on a bilateral agreement, b) incident report writing, c) national statement writing, d) arranging a technical meeting, e) assessing licensee's reports, etc. |
| Day 5                            | Applying the knowledge and skills acquired through the training and assessing the effectiveness of the course.   | [Exercise] A mock meeting to discuss the products of Day 4's exercise.<br>[Discussion] Self-assessment and a way forward for developing a career in nuclear nonproliferation and security.  |

## 4. Elements to be considered further

While many capacity-building programs for the next generation are thriving, certain elements should be considered to make them more comprehensive and beneficial.

### 4.1 Measuring effectiveness

Measuring effectiveness is challenging for many capacity-building programs because it requires qualitative assessment, which involves collecting, managing, and analyzing vast data. Developing an effective methodology and investing resources in qualitative assessment are essential steps to identifying areas for improvement and enhancing the effectiveness of these programs.

#### *4.2 Network*

Nuclear nonproliferation and security require collaboration among people from diverse disciplines and nationalities. However, many young professionals face the actual professional stage without sufficient opportunities to learn how to communicate and collaborate effectively. Therefore, capacity-building program planners can create a platform for a network that facilitates such interactions, enabling experiences that involve sharing, encouraging, and communicating.

#### *4.3 Tangible and sustainable opportunities*

While these programs help raise awareness, many young people hope such activities will be translated into tangible and sustainable employment opportunities. Hence, it is crucial to establish a policy for hiring and training more young professionals with secured funding to pay reasonable remuneration.

### **REFERENCES**

- [1] UN DESA, World Population Prospects 2022 (2022), [population.un.org/wpp/Download/Files/1\\_Indicator%20\(Standard\)/EXCEL\\_FILES/1\\_General/WPP2022\\_GEN\\_F01\\_DEMOGRAPHIC\\_INDICATORS\\_COMPACT\\_REV1.xlsx](https://population.un.org/wpp/Download/Files/1_Indicator%20(Standard)/EXCEL_FILES/1_General/WPP2022_GEN_F01_DEMOGRAPHIC_INDICATORS_COMPACT_REV1.xlsx).
- [2] E.Park, S.Park, Enhancing Youth Engagement in Nuclear Security, International Nuclear Security Conference 2024
- [3] WINS, Facilitating the Engagement of Young Professionals in Nuclear Security, Vienna, 2022
- [4] FrameWorks Institute, Capacity Development Methods, [www.framework.org.uk/wp-content/uploads/Capacity-building-programme-methods-template-signed1.pdf](http://www.framework.org.uk/wp-content/uploads/Capacity-building-programme-methods-template-signed1.pdf), Retrieved Aug. 14, 2024