

Analysis on the 2023 NTI Nuclear Security Index

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1. Introduction

In July 2023, Nuclear Threat Initiative (NTI) published the 2023 NTI Nuclear Security Index. Since 2012, NTI and Economist Impact (EI) has been publishing biannual report, which evaluates global nuclear and radiological security across 175 countries and Taiwan. Now in its six edition, the publication cycle has been modified to 3 years. With recognition to the NTI, one of the most active non-governmental organizations in nuclear security fields, NTI Index is widely referred as an objective assessment of nuclear security conditions around the world.

This report summarizes the main contents of the NTI Index focusing on the NTI's analysis on the Republic of Korea (ROK)'s nuclear security activities. Based on this, the report aims to draw out ROK's further strategy for not only responding to the NTI's next cycle research, but also improving our national efforts to secure nuclear materials and facilities.

2. Methodology of NTI Index

NTI Index categorize 175 countries and Taiwan into three groups by nuclear security conditions. Group A, 22 countries with 1 kilogram or more of weapons-usable nuclear material, is assessed for their policies, actions, and other factors related to securing those materials against the risk of theft. Group B, 153 countries and Taiwan with less than 1 kilogram of or no weapons-usable nuclear materials, is assessed for their policies, actions, and other factors related to their support for global nuclear security efforts. Group C, 46 countries and Taiwan with nuclear facilities where sabotage could result in a dangerous release of radiation, is assessed for their policies, actions, and other factors related to protecting nuclear facilities against the risk of sabotage.

NTI Index is based on open-source information, which is gathered by about 500 researchers from EI. This includes primary legal texts and legal reports; government and academic publications and reports; websites of government authorities, international organizations, and non-governmental organizations; interviews with experts; and local and international news media reports. The preliminary analysis is advised by an international panel of experts and consulted with governments for enhancing accuracy and transparency of the process. Through these process, NTI scores a scale of 0 to 100 for each countries for each groups and rank countries by the scores.

The Theft: Support Global Efforts ranking assesses countries in Group B based on three categories, which are a) Global Norms, b) Domestic Commitments and Capacity, and c) Risk Environment. Protect Facilities ranking assesses countries in Group C with nuclear facilities based on five categories, which are a) Number of Sites, b) Security and Control Measures, c) Global Norms, d) Domestic Commitments and Capacity, and e) Risk Environment.

3. Result of ROK's NTI Index

The ROK, which is corresponded to Group B and C, closely communicated with the NTI and EI to provide detailed explanations to the ROK's nuclear security policies and activities. As a result, the ROK earn score of 94 for Group B analysis on supporting global security efforts against the risk of theft, which ranks 3 among 154 countries. For Group C analysis on protecting nuclear facilities against the risk of sabotage, the ROK earn score of 81, which ranks 15 among 47 countries.

Comparing to the 2020's result, the score for Group B analysis is maintained but the rank went up by one place. Three points were raised for the score of Group C analysis, which led the rank went up by three places.

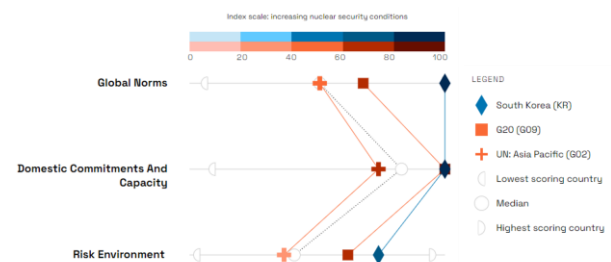


Figure 1. ROK's score in the Theft: Support Global Effort assessment (Group B)

Group B analysis in detail, the ROK is one among the countries got the highest score for the categories for Global Norms, which means it participates in important international legal commitments, voluntary global initiatives, international assurances, and IAEA nuclear security information circulars. Also, the ROK is one among the countries that got the highest score for the categories for Domestic Commitments and Capacity, which means it is has well implemented its international commitments and its capacity to do so. The ROK's score in Risk Environment category, which is consisted with contextual indicators, is fairly high compared to the

G20 countries and Asia Pacific countries, but the score in this category decreased 17 points from the 2020's result because number of firearms seized by law enforcement has been recently increased.

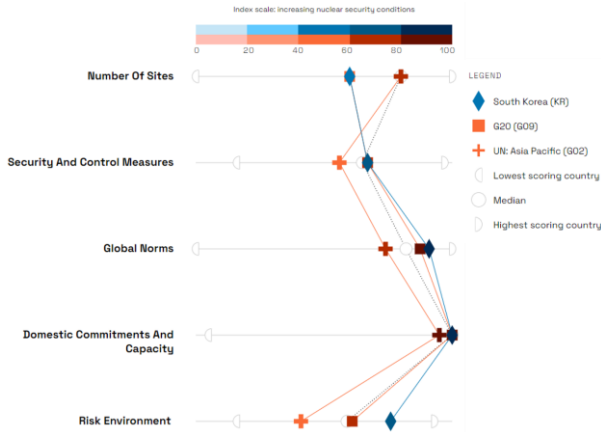


Figure 2. ROK's score in the Protect Facilities assesses (Group C)

Group C analysis in detail, the ROK, one of the largest nuclear energy promoting countries that have 5 sites for commercial nuclear power plants, is needed to put more attention in protecting its nuclear facilities against sabotage. To that end, the ROK is implementing security and control measures for its nuclear materials and facilities in a good manner, but some of indicators in this category was found out to be enhanced. The ROK got significantly high score for the indicators related to the on-site physical protection; control and accounting procedures; response capabilities; and cyber security. However, scores for the indicators related of insider threat prevention and security culture were lower than median.

4. Suggestions for Improving ROK's Nuclear Security

The 2023 NTI Index for the ROK suggests to improve its efforts for preventing insider threats, and reinforcing nuclear security culture.

For the prevention of insider threats, following actions are recommended: a) drug test, background checks, and psychological or mental fitness check for security and other personnel with access to nuclear material areas, and b) vetting security and other personnel with access to nuclear material areas with at periods of two years or less. Unlike other countries where may require drug test and psychological evaluation as part of pre-employment physicals, they are rarely required in the ROK. It is due to its low awareness of mental health care [3], and low rate of drug offenders [4]. However, considering that recent incidents of indiscriminate violence and rise in drug-use are becoming a social concern, it is timely to discuss

requiring such tests and assessments for the personnel at nuclear facilities. Although it would have been better to proactively adopt stricter standards for nuclear facilities, which are critical to the national security, the public opinion would be in favor for the regulatory authorities to initiate their works to set higher bars. For reinforcing nuclear security culture, following actions are recommended: a) distinguishing between safety culture and security culture in the regulation or annual reports, and b) requiring licensees or operators to conduct security culture assessments. In the ROK, the concept of nuclear security culture is clearly established. However, other than informal surveys conducted by the regulatory authority, the regulation does not require the licensees to have a self-evaluation system of their nuclear security culture. For a well-designed evaluation, indicators that are adequate to the Korean culture and each facilities' organizational characteristics should be developed. Moreover, the regulatory body should be able to give a guideline for the licensees in developing such indicators, but thorough research and analysis should be followed. Hence, this part of the requirements may not be easily fulfilled, even hardly in next three years, when the NTI researches for its next edition of the Nuclear Security Index..

REFERENCES

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- [4] The Korea Herald, Soring drug use catches Korea unprepared, 2022