

Analyzing Nuclear Security Trend of the ROK using NTI Nuclear Security Index

Chan Kim^{a*}, Eunji Chang^a

^aKorea Institute of Nuclear Nonproliferation and Control(KINAC)
1534 Yuseong-daero, Yuseong-gu, Daejeon 34054

*Corresponding author: ckim@kinac.re.kr

1. Introduction

Beginning with the publication of the first Nuclear Security Index in 2012, Nuclear Threat Initiative(NTI) has been revising the index every two years. Since then, NTI has developed its methodology of assessing state-level nuclear security by detailing the index into two different frames, *Theft* and *Sabotage* ranking. This paper tries to examine the latest version of index and its data, especially focusing on that of the Republic of Korea, and find out how it was assessed as the nuclear security trend has been changed.

2. Findings and Analysis

There are no agreed definitions of nuclear security, however, a definition in the IAEA Nuclear Security Advisory Group(AdSec) report, “prevention of theft, sabotage, unauthorized access, illegal transfer or other malicious acts related to nuclear material, other radioactive material or facilities” is generally accepted. Nuclear security is now recognized as an integral part of promoting the peaceful use of atomic energy.

2.1 Overview of Evaluation Indicators in the NTI Nuclear Security Index

As noted above from the definition of nuclear security, the broad scope covered by the concept of nuclear security entails a large number of assessment items by NTI's quantitative assessment methodology.

The first index and the second revision, the assessment system was simple and separated states whether by the possession of weapon-usable nuclear material or not. From the third revision, the assessment frame was divided into *Theft* and *Sabotage* ranking to reflect the changing international situation as shown in figure 1 and 2.

2.2 ROK Nuclear Security Trend Analysis

The Republic of Korea has endeavored to maintain a proactive position in the international community, contributing to building of an international nuclear security regime and international cooperation system by hosting the 2nd Nuclear Security Summit in Seoul. The Republic of Korea has never been ousted from the top 10 of NTI's Nuclear Security Index, which makes the ROK one of the leading countries.

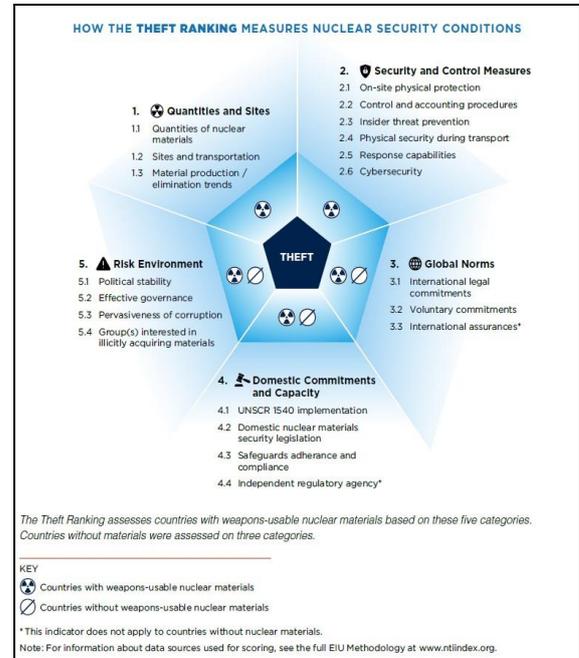


Fig. 1. How the Theft Ranking measures nuclear security conditions



Fig. 2. How the Sabotage Ranking measures nuclear security conditions

Throughout four revisions of the nuclear security index since 2012, some country scores have significantly increased or declined, reflecting international and national nuclear security trends.

Despite continuous assessment frame, weight changes and other slight adjustments of the index, the ROK remains at the top level without any significant differences in existing scores or rankings. However, scores and rankings of the ROK seem to be overly stable compared to those of other countries that have outpaced the ROK in recent years. In this paper, the scores of several countries ranked in similar range were compared to identify the causes of differences in scores.

Table I: score comparison between the countries with similar ranking

Overall Score	Score/100	Change Since		
		2016	2014	2012
Singapore	93	+2	+29	+29
Malta	91	+7	+7	+15
United Arab Emirates	90	+9	+11	+9
South Korea	90	0	+8	+8

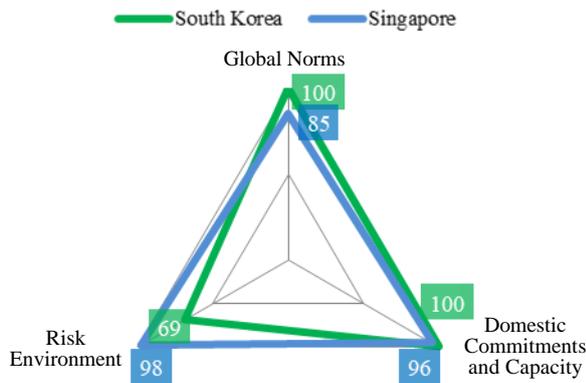


Fig. 3. Two-Country Comparison: Singapore vs ROK

The largest difference between the ROK and Singapore is *Risk Environment* as shown in the figure above, and the assessment items in this category are 5.1) political stability, 5.2) governance efficiency, 5.3) corruption, and 5.4) the possibility of malicious nuclear sequestration. It has ~ 5 detailed evaluation items and detailed indices are as follows.

Table II: category of Risk Environment and its sub-indicators

5. Societal Factors	
5.1 Political Stability	
5.1.1	Social Unrest
5.1.2	Orderly transfers of power
5.1.3	International disputes or tensions
5.1.4	Armed conflict
5.1.5	Violent demonstrations or violent civil or labor unrest
5.2 Effective Governance	
5.2.1	Effectiveness of the political system

Global Norms

5.2.2	Quality of the bureaucracy
5.3 Pervasiveness of corruption	
5.3.1	Pervasiveness of corruption
5.4 Groups interested in illicitly acquiring materials	
5.4.1	Groups interested in illicitly acquiring materials

Since 2012, the score of this category has not changed much from 69 points, which is the 25th place out of the 154 countries for the 5th category itself. The sub-indicators in the category, 5.1) *Political Stability*, 5.2) *Effectiveness of Governance*, 5.3) *Pervasiveness of Corruption*, and 5.4) *Group interested in illicitly acquiring materials* each was ranked as 83rd, 5th, 25th, and 1st respectively. The lowest rated indicator was *Political Stability*, and its rank is equivalent to Rwanda or Uzbekistan. For sub-indicators of this category, the scores and rank are like below:

Table III: scores and rankings for sub-indicators in category no.5

5. Risk Environment (25th/154)			
	Score /100	Rank /154	Tied for the same ranking
5.1 Political Stability	50	83	Egypt, Rwanda, Uzbekistan, etc.
5.2 Effectiveness of Governance	75	5	Taiwan, UAE, Chile, etc.
5.3 Pervasiveness of Corruption	50	25	Cuba, Kuwait, Niger, Rwanda, etc.
5.4 Groups interested in Illicitly Acquiring Materials	100	1	Czech, Finland, Hungary, Mexico, etc.

The Republic of Korea has received high marks for voluntary sign-up for global commitments, the efficiency of governance, and its capacity. In particular, regional disputes and intermittent armed conflicts including North Korea issues in the North-East Asia sector are the main causes of ROK's scores hovering around at the lower ranks. Another reason for lowering scores in this category, *Pervasiveness of Corruption*, is also noteworthy. For this sub-indicator, ROK are tied for 25th place with Cuba, Argentina, Ghana and Rwanda, even though Korea has been in the transition period to emerge in the rank of the world's top developed countries. According to the Corruption Perception Index, which is an index published by Transparency International since 1995, ranks 180 countries "by their perceived levels of corruption" as assessed by experts

and survey, ROK ranks 45th out of 180 countries and shows no significant change in its ranking or score since 2013.

The aforementioned results from NTI Nuclear Security index and the Corruption Perception Index implies unavoidable truth that ROK has to overcome and self-reflect the inside of it in the near future, not only caring about the appearance of nuclear security framework, but also ensuring the inner stability of it, as a world-class nuclear security leading country.

3. Conclusions

The Republic of Korea has continued to make internal and external efforts to strengthen its nuclear security capabilities. For South Korea, which has a deep and complicated issue with North Korea and several regional disputes, it is difficult to resolve or improve low-scored sub-indicators of the Risk Environment in a short time. But a gradual effort, such as countering corruption accompanied by self-reflection, to build up internal stability must begin now, at the site-, institutional-, or national level.

REFERENCES

- [1] Nuclear Threat Initiative. NTI Nuclear Security Index Theft|Sabotage “Building a Framework for Assurance, Accountability, and Action”. Fourth Edition. Washington D.C.
- [2] “Security Aspects of Nuclear Facilities | IAEA.” Iaea.Org, 9 Dec. 2016, www.iaea.org/topics/security-aspects. Accessed 25 Aug. 2019.
- [3] Transparency International, the global coalition against corruption. Corruption Perceptions Index 2018.
- [4] Chun, Bong-geun. “The Expectations and Backgrounds of Nuclear Security Summit”. The Asan Institute for Policy Studies. Mar 04, 2011.
- [5] Lee, Ho-ryung. KIDA Policy Briefing. “ROK, contributing to the advance of NSS’s outcomes”. Apr 04, 2016.
- [6] Nuclear Threat Initiative. NTI Nuclear Security Index Theft|Sabotage “Building a Framework for Assurance, Accountability, and Action”. Third Edition. Washington D.C.
- [7] Nuclear Threat Initiative. NTI Nuclear Security Index “Building a Framework for Assurance, Accountability, and Action”. Second Edition. Washington D.C.