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Master's Thesis

**A Research on the Role of Middle Power in
the International Nuclear Non-Proliferation
Regime: Case of South Korea**

국제 핵 비확산 레짐과 중견국의 역할에 대한 연구:
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Graduate School of International Studies

Seoul National University

International Cooperation Major

Min Seung Kim

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Seong-Ho Sheen

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Graduate School of International Studies

Seoul National University

International Cooperation Major

Confirming the master's thesis written by

Min Seung Kim

August 2020

Chair Taekyoon Kim

Vice Chair Oung Byun

Examiner Seong-Ho Sheen



(Seal)



(Seal)



(Seal)

Abstract

Contemporary global nuclear non-proliferation regime suffers from internal and external challenges where the regional and political fragmentation of the member states deteriorates the effectiveness. The purpose of this paper is to analyze the role of middle powers in the non-proliferation regime through the case study of South Korea, then suggest pertinent policy measures to advance the middle power capacity and contribution to strengthening the regime. To this end, this paper first examines the theories relevant to the concept and adopts the three-level role theory model for the analysis. The following chapter delves into the history and structure of the non-proliferation regime, before analyzing the key issues of the contemporary landscape and the resolvable potential of middle powers against these challenges. Subsequently, this thesis analyzes South Korea as a nuclear middle power based on the established framework and its three criteria to verify South Korea's status as a nuclear middle power and evaluate its performance within the domain of international nuclear non-proliferation. This paper concludes with policy recommendations to consolidate South Korea's nuclear middle power status and bolster its capacity to contribute in strengthening the non-proliferation regime.

KEYWORDS: nuclear non-proliferation, middle power, role theory, South Korea

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Abbreviations

ABM – Anti-Ballistic Missile Treaty	Cooperation in Europe
AP – Additional Protocol	CTBT – Comprehensive Nuclear Test Ban Treaty
APR – Advanced Power Reactor	CVID – Complete Verifiable Irreversible Dismantling
APWR – Advanced Pressurized Water Reactor	EPR – Evolutionary Power Reactor
ARF – ASEAN Regional Forum	FMCT – Fissile Materials Cut-off Treaty
ARTI – Advanced Radiation Technology Institute	GICNT – Global Initiative to Combat Nuclear Terrorism
CD – Conference on Disarmament	GIF – Generation IV Forum
CIA – Central Intelligence Agency	HEU – Highly Enriched Uranium
CPPNM – Convention on the Physical Protection of Nuclear Material	IAEA – International Atomic Energy Agency
CSA – Comprehensive Safeguards Agreement	ICBM – Intercontinental Ballistic Missiles
CSCE – Conference on Security and	

ICRP – International Commission on Radiological Protection

IEA – International Energy Agency

IFNEC – International Framework for Nuclear Energy Cooperation

INF – Intermediate-Range Nuclear Forces Treaty

INFCEP – International Nuclear Fuel Cycle Evaluation Program

INFCIRC – Information Circulars

ISS – Information Sharing System

KAERI – Korea Atomic Energy Research Institute

KINAC – Korea Institute of Nuclear Non-proliferation and Control

KINS - Korea Institute of Nuclear Safety

LEU – Low Enriched uranium

LTBT – Limited Test Ban Treaty

MOFA – Ministry of Foreign Affairs

MSIT – Ministry of Science and Information and Communication Technology

MTIE – Ministry of Trade, Industry and Energy

N-PEMS – Nuclear Project Management Export System

NAC – New Agenda Coalition

NAM – Non Alignment Movement

NAPCI – Northeast Asia Peace and Cooperation Initiative

NATO – North Atlantic Treaty Organization

NCA – Nuclear Cooperation Agreement

NEAPC – Northeast Asia Plus Community for Responsibility-sharing

NEASED – Northeast Asia Security Dialogue

NEPS – Nuclear Export Promotion Service

New START – New Strategic Arms Reduction Treaty

NNWS – Non-nuclear Weapon States

NPDI – Non-Proliferation and Disarmament Initiative

NPT – Treaty on the Non-Proliferation of Nuclear Weapons

NRC – US Nuclear Regulatory Commission

NSG – Nuclear Suppliers Group

NSS – Nuclear Security Summit

NSSC – Nuclear Safety and Security Commission

NWFZ – Nuclear Weapons Free Zone

NWS – Nuclear Weapon States

OBOR – One Belt One Road initiative

PNET – Peaceful Nuclear Explosions Treaty

PSI – Proliferation Security Initiative

PWR – Pressurized Water Reactor

RCA – Regional Cooperation Agreement

RevCon – Review Conference (NPT)

SALT – Strategic Arms Limitation Talks

SLBM – Submarine-launched Ballistic Missiles

SMR – Small Modular Reactor

SOE – State Owned Enterprise

SORT – Strategic Offensive Reductions Treaty

TCP – Technical Cooperation Program

TCS – Trilateral Cooperation Secretariat

TPNW – Treaty on Prohibition of Nuclear Weapons

TRM – Top Regulators Meeting

TTBT – Threshold Test Ban Treaty

UNGA – United Nations General Assembly

UNSCR – United Nations Security Council Resolution

ZC – Zangger Committee

Chapter I

Introduction

1.1 Research Background

The International Non-Proliferation Regime and Contemporary Issues

Since the first-ever nuclear explosion by the United States (US) in 1945, the introduction of atomic energy has dramatically changed humanity's way of life. The dual-use nature of nuclear energy as a powerful source of energy generation and detrimental weapon of mass destruction, quickly emerged as the central topic of the international community's political agenda on how to manage the technology wisely and safely. In response to the spread of nuclear weapons, the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) with the three main objective pillars of nuclear disarmament, non-proliferation, and promotion of peaceful use of nuclear energy, entered into force in 1970 which became the cornerstone of the development of current international non-proliferation regime. In an effort to fill the loopholes vulnerable for abuse and comprehensively prevent both horizontal and vertical proliferation, various international arrangements with more specific objectives such as export control, safeguards, arms reduction, and physical protection, has been supplemented over time.

Despite the endeavors, the contemporary global non-proliferation regime is seriously challenged with both internal and external problems. Internally, the regime faces several key issues in a political stalemate due to the difference in perception towards the nature of the regime between 'nuclear haves' and 'nuclear

have-nots,' and the competition among 'nuclear-haves.' Externally, the emergent threats from the cases of non-compliance to the non-proliferation norms such as North Korea's 6th nuclear test in 2017¹ and Iran's clandestine uranium enrichment program,² and the technological developments such as issues of cybersecurity on nuclear facilities, impose a critical task for the regime to cope with. In addition, the recent behavior of the US, the de facto leadership of the international nuclear order, under Trump administration arouses questions for its commitment towards global non-proliferation as shown in its unilateral withdrawal from the Iran deal, which furthers the deterioration of the regime's stability and effectiveness. Overall, the regime is encountering critical challenges on the aspects of all three pillars; in light of the continuous growth projection of nuclear energy in the future³, the political fragmentation of the non-proliferation regime against the evolving security threats requires for an urgent resolution.

Expansion of Middle Power's Role in International Non-Proliferation

Similar to other international regimes, the operation mechanism for the non-proliferation regime has been predominantly engineered by superpowers or great

¹ "North Korea nuclear test: Hydrogen bomb 'missile-ready'," *British Broadcasting Corporation (BBC)* (2017, September 3) Retrieved from <https://www.bbc.com/news/world-asia-41139445>

² Hafezi, P., "Iran fuels centrifuges, resumes uranium enrichment at Fordow," *Reuters* (2019, November 7), Retrieved from <https://www.reuters.com/article/us-iran-nuclear-uranium/iran-fuels-centrifuges-resumes-uranium-enrichment-at-fordow-idUSKBN1XG2WN>

³ "Energy, Electricity and Nuclear Power Estimates for the Period up to 2050," *International Atomic Energy Agency (IAEA)* (2019) (1st ed.). Retrieved from <https://www.iaea.org/publications/13591/energy-electricity-and-nuclear-power-estimates-for-the-period-up-to-2050>

powers; in the case of the non-proliferation regime, the input of the nuclear weapon states (NWS) had greater influence than that of non-nuclear weapon states (NNWS) in the agenda setting. Nonetheless, in response to slow-paced disarmament of the NWS and gradually deteriorating effectiveness of the regime, middle powers recently begun to expand their role to achieve the primary objective of the regime by actively engaging with the non-proliferation issues. For instance, in addition to five different treaties of Nuclear Weapons Free Zone (NWFZ) led by the regional leadership across Latin America, Southeast Asia, Africa, South Pacific, and Central Asia, the Treaty on Prohibition of Nuclear Weapons (TPNW) was adopted at the United Nations Conference in 2017 under the leadership from the ‘core group’ comprised of middle powers such as Brazil, Egypt, Ireland, Mexico, South Africa, and New Zealand.⁴ The practicality and effectiveness of TPNW remain in question as none of the NWS and their military allies signed the treaty; however, the significance of middle powers taking initiatives for global non-proliferation lies in its potential as the possible solution to contemporary challenges of the non-proliferation regime, especially in the context of inducing multilateral cooperation and collectively progressing towards common objective through their niche diplomacy.

While the expectations for the roles ought to be played by middle powers in the international community is growing, the definition of middle power

⁴ Michael Hamel-Green “The Nuclear Ban Treaty and 2018 Disarmament Forums: An Initial Impact Assessment,” *Journal for Peace and Nuclear Disarmament*, Vol.1, No. 2 (2018): 436-463

remains ambiguous and controversial. In the review of the prolonged debate within the political and academic circles on the conceptualization of middle power, the opponents of perceiving middle power as a legitimate status in the international order regard it as a mere rhetoric or self-claimed identity. On the other hand, the proponents highlight the importance of the concept's influence in the shaping of certain diplomatic behavior of a country. Establishing the precise definition of middle power per se is not the most urgent issue, however, acquiring a certain degree of common understanding for the definition is necessary for the strengthening of multilateral cooperation on global issues; only when this common understanding is achieved, further clarification of the like-minded potential candidates for collective initiatives, encouragement for their participation, and consolidation of 'proper middle powermanship,' or 'appropriate' behavioral guidelines of middle powers, become possible.

'Middle Power' South Korea and the Nuclear Policy

In relation to the discourse on middle power and nuclear non-proliferation, South Korea is one of the most frequently discussed countries alongside traditional middle powers such as Canada and Australia who all explicitly mentioned middle power diplomacy as the national diplomacy strategy. South Korea's identity and status as a middle power started to develop since 2008, under Lee Myung-Bak administration's 'Global Korea' policy; in the global nuclear landscape, South Korea's successful export of nuclear reactor to the United Arab Emirates (UAE) in 2009 and hosting of 2012 Nuclear Security Summit marks the starting point of its change in status as a NNWS nuclear power and nuclear supplier. Over the past

years, South Korea became the world's 5th largest nuclear electricity generating country and emerged as one of the few competent nuclear exporters. At the same time, South Korea has been placed under the direct security threat of North Korea's nuclear issues since the 1980s and witnessed the 2011 Fukushima Daiichi disaster as the nearest neighboring country. On various fronts, the issues of nuclear safety, non-proliferation remains to be one of the central topics of South Korea's political agenda regardless of the change in administrations, as it is strongly associated with its national security as well as energy security.

Currently, South Korea's nuclear policy under Moon Jae-In administration faces criticisms for its incoherency⁵ and lack of validity.⁶ Since 2017, South Korea began implementing the nuclear-phase out policy in accordance with President Moon's election pledges in concern for the possible nuclear accidents similar to Fukushima; however, South Korea is currently bidding for the nuclear construction in Saudi Arabia⁷, and on September 2019, the Ministry of Trade, Industry and Energy (MTIE) announced its strategy to promote nuclear export which involved a shift in focus of nuclear exports and increase in budget for smaller nuclear power companies' research and

⁵ Eunjung Lim (2019) South Korea's Nuclear Dilemmas, *Journal for Peace and Nuclear Disarmament*, 2:1, 297-318, DOI: [10.1080/25751654.2019.1585585](https://doi.org/10.1080/25751654.2019.1585585)

⁶ Nguyen, Viet Phuong. "An Analysis of Moon Jae-in's Nuclear Phase-out Policy." *Georgetown Journal of Asian Affairs*, (Winter 2019): 66–72.

⁷ Jane Chung, "South Korea's KEPCO shortlisted to bid for Saudi nuclear project," *Reuters*, (2018, July 1). Retrieved from <https://www.reuters.com/article/us-southkorea-nuclear-saudi/south-koreas-kepcos-shortlisted-to-bid-for-saudi-nuclear-project-idUSKBN1JR1GA>

development.⁸ South Korea also announced to cope with the issues of inter-Korean relations and denuclearization of North Korea, following the three objectives and four strategies of ‘Korean Peninsula Peace Process’⁹; yet, the controversial joint research of pyro-processing technology with the US as negotiated under the US-ROK nuclear cooperation agreement in 2015 has been carried out continuously albeit the primary aim of researching the reprocessing technology is for reduction of the saturating nuclear spent fuel. Although the evaluation of the nuclear phase-out policy, also referred to as energy transition policy, and its implications in the short-term are not viable, South Korea’s current nuclear policy is directed towards an uncertain future.

1.2 Research Purpose and Research Questions

Against this backdrop, the purpose of this thesis is to analyze the role of middle powers in the domain of international nuclear non-proliferation regime through the case study of South Korea, then suggest pertinent policy measures to expand its role and capacity in contribution to improving global non-proliferation. In the process of analysis, verification of South Korea’s middle power status and assessment of its performance is undertaken drawing upon the role-theory of middle powers. To this end, this paper reviews extensive literature on middle powers and examine the strengths and weaknesses of various approaches to the

⁸ Min-Hee Jung, “S. Korean Gov’t to Revamps Nuclear Power Export Strategy,” *Business Korea*. (2019, September 23) Retrieved from <http://www.businesskorea.co.kr/news/articleView.html?idxno=36245>

⁹ Moon Jae-In’s Policy on the Korean Peninsula, *Ministry of Unification* https://www.unikorea.go.kr/eng_unikorea/policyissues/koreanpeninsula/strategies/

concept, in order to select the most appropriate theoretic framework. Then, an overview of the development of the global nuclear order and the structure of the non-proliferation regime is examined, prior to the analysis of contemporary issues of the regime, for the purpose of investigating the viable areas for middle power's contribution. The following chapters analyze South Korea's middle powermanship in the domain of international nuclear non-proliferation regime and its critical limitations as a nuclear middle power in relation to its contemporary nuclear policy. Subsequently, this thesis proposes relevant policy measures for South Korea to consolidate the middle power status and expand capacity for contribution to improving the global non-proliferation and nuclear safety. The final chapter provides limitations of the research and concludes with a summary of the findings and implications.

To this end, this thesis endeavors to answer the following research questions:

- What does it mean to be a middle power in the international nuclear order?
 - Why is the analytic approach towards the challenges of the global non-proliferation regime from the middle power perspective necessary?
 - What are the underlying issues and limitations of the contemporary global non-proliferation regime and what role could middle powers play against the problems?
- What is the assessment of South Korea's performance as a nuclear middle power?
- What policy measures should South Korea pursue to consolidate its status and enhance its capacity as a middle power in the global nuclear order?

Chapter II

Literature Review and Methodology

2.1 Discourse on Middle Power

From an illusional ‘myth’ to a practical foreign policy doctrine, the endeavors within the realm of international relations (IR) studies to define the concept of middle power have made fruitful yet controversial results. Given the ambiguous and broad nature of the concept, various circles of policymakers and scholars of different perspectives have brought contrasting standards in their definition of middle powers in the international politics; such contrasts led to the confusion and clashing debates between the experts with much criticisms against the respective depictions of the concept, however, it is undeniable that the notion of middle power became a distinct category of research in the academia despite the aforementioned debates in heat.

Historic Origin and Traditional Concept of Middle Power

In regards to the origin of theoretical debate on middle power, the concept was first introduced to the world by Canadian Prime Minister Mackenzie King¹⁰ and Australian Minister of External Affairs H.V. Evatt¹¹ in the post-WWII era as foreign policy rhetoric, in attempt to secure the emancipation of respective

¹⁰ R.A. MacKay, “The Canadian Doctrine of the Middle Powers”, *Empire and Nations*, (1969): 133-143.

¹¹ Carl Ungerer, “The “Middle Power” Concept in Australian Foreign Policy,” *Australian Journal of Politics and History*, Vol. 53, No. 4 (2007): 538-551.

diplomatic policies from the British influence. During the post-WWII times, “the middle powers were those states who had fought alongside the Great Power allies [namely, Australia and Canada,] and who had made a demonstrable commitment to the war effort. Being a middle power was a function of relative military capabilities — sufficient to warrant inclusion in the post-war peace negotiations, but clearly not as significant when compared to overwhelming military resources of the great powers” (Ungerer, 2007, pg. 548). According to Beeson and Higgott, the traditional definition of middle power has been largely understood in three different categories as follows: a state is a middle power due to its 1) location within the power systems, 2) material capacity (i.e. tangible values such as population, capital, resources, etc.) between great and lesser powers, and 3) position between competing political or ideological systems. (Beeson and Higgott, 2014)

Development of Literature and Middle Power Models

The chronological evolution of the studies on middle power, which is necessary to deeply understand the concept and relevant controversies, has been well summarized by Jeffrey Robertson. Since the post-war period, literatures on middle power and its definition were built upon the veins of geographic, positional, normative, and behavioral attributes of states, led by the key scholastic figures such as Richard Higgott, Andrew Cooper, and Kim Nossal. While defining middle power on geographic and positional standards were more of re-labeling of the traditional approaches towards the concept, the normative and behavioral standards in defining middle powers focused on a state’s diplomatic

capacity – both in practice and potential – and the international influence it exerts on the global stage such as conflict mediation, facilitating multilateralism, and promoting good international citizenship. Near the 21st century, Adam Chapnick’s functional, hierarchical (positional), and behavioral approaches to compromise the different categorizations of a middle power in defining the concept have provided more analytical framework that subsequently furthered the expansion of middle power studies: the functional model focalized on a state’s capability to carry out certain functions and to take relevant responsibilities in the international system; the hierarchical model focused on a state’s material capabilities where such division provides a rank of the states in a hierarchical manner within the international system; lastly, the behavioral model referred to the states’ common behaviors of seeking multilateralism, mediating conflicts, and upholding moral values of ‘good international citizenship.’¹² (Robertson, 2017)

Debates on the Definition and Importance of Middle Power Studies

More recent definitions adopted new or combined perspective towards middle power concept such as identity-based, systemic, complex approach¹³, and network-theory based¹⁴; however, all of the above-mentioned approaches and

¹² Adam Chapnick, “The Middle Power,” *Canadian Foreign Policy Journal* Vol. 7, No. 2 (1999): 73–82.

¹³ Identity-based approach adopts the claim of a state’s political leader on the country’s self-conception. Simply put, a state which regards itself as a middle power satisfies the definition of middle power. Systemic approach highlights a state’s systemic impact and power, where power is defined as a state’s capability influence the behavior of other states. Complex approach focalizes on a state’s material capacity and self-conception in combination, in attempt to fill the gap of different approaches. (Kříž, 2019)

¹⁴ Network-theory based approach focuses on the positional power a state could obtain in

definitions of middle power suffered from critical weaknesses which resulted in the failure of producing a consolidated and widely accepted definition of the concept. For instance, the hierarchical approach's ranking of states by measurable attributes such as territorial size, population, or GDP may seem to provide a more precise and objective delineation of middle powers; however, because it strongly depends on 'which measurable indicator' the hierarchy of power is based on, it suffers similarly from any other attempts to measure 'power' such as being too contextual or failing to take relativistic aspects of power.

Much literatures of middle power have revealed that the attempts to classify the middle power states suffer on the issues of elasticity, inconsistency, and subjectivity¹⁵. In this connection, the critics of the study have found the concept as tautological¹⁶ and lacking conceptual clarity¹⁷: as Jonathan Ping said in 2005, hasty proliferations of middle power's definition without a reference to precedent studies is one of the core causes of the contention in the contemporary

accordance with the configurational dynamic of various types of networks. Structure is considered as a flexible concept that could be altered depending on the various actors' interactions and behavioral patterns, and by strategically taking advantage of the structural holes in international network, middle powers' status, subsequent roles, and diplomatic strategy for securing interest could change accordingly. (Kim, 2011)

¹⁵ David A. Cooper, "Challenging Contemporary Notions of Middle Power Influence: Implications of the Proliferation Security Initiative for Middle Power Theory," *Foreign Policy Analysis*, Vol. 7, (2011): 317-336.

¹⁶ Eduard Jordaan, "The Concept of a Middle Power in International Relations: Distinguishing Between Emerging and Traditional Middle Powers," *Politikon: South African Journal of Political Studies*, Vol. 30, No.1 (2003): 165-181.

¹⁷ Paul Gecelovsky, "Constructing a Middle Power: Ideas and Canadian Foreign Policy," *Canadian Foreign Policy Journal*, Vol. 15, No. 1 (2009): 77-93.

literature¹⁸. On the contrary, the proponents of the concept – especially from the states which considered themselves as middle powers – have been extending the quantity and quality of middle power studies with a greater number of single country-case studies than comparative analysis on different middle powers. Indeed, as in Cooper’s words, the studies for middle power theories have been a “thriving cottage industry.” (Cooper, 2011, pg. 318) There have been increasing attempts to include new states, in addition to Canada and Australia, as case studies for middle power such as Mexico and India (Lechini, 2007), Indonesia and Malaysia (Ping, 2005), Turkey (Engin, 2015), South Korea (Cotton, 2013) and more.

While the holistic approach challenges the middle power concept with its ambiguity and lack of consistency in definition as seen in the review above, it is erroneous to conclude the study of the classification of the modern international system as ineffective and hastily reject it without merit. As Jeffery Robertson put it, “The rhetorical nature of current approaches to definition makes any attempt to define a middle power less effective... defining and redefining the term is a futile exercise...to advance beyond its current sclerotic state, [the field] requires a more pragmatic approach.” (Robertson, 2017, pg. 367) The purpose of this thesis is not to challenge the conceptual definition of middle power nor to offer a new one. Rather, one of the ambitious goals of this thesis is to contribute in the advancement of the literature by conducting a topic-specific case study of

¹⁸ Jonathan H. Ping, “Middle Power Statecraft: Indonesia, Malaysia and the AsiaPacific,” *Ashgate Publishing Limited* (2005): 270.

a state in a distinct dimension of modern international order.

Through the expansion of middle power studies and further clarification of their potential and ideal roles, non-conventional perspective on the conundrums of the international system could be attained; approaching the issues of nuclear non-proliferation outside of superpowers' or NWSs' perspective, and focusing on the possible contributions and participation of middle powers in the non-proliferation efforts could bring about potential solutions to the sustained problems within the nuclear non-proliferation regime. To this end, the thesis applies middle power theories and framework to analyze South Korea's middle-powermanship in the global nuclear order; this case study would not only vertically expand the middle power literature by adding an in-depth analysis on South Korea as a middle power, but also horizontally by assessing the elasticity of middle power framework on a specific type of international order. Before narrowing down on the specific framework and scope of analysis for this thesis, the following section explores the nuclear non-proliferation literatures that have utilized middle power concepts.

2.2 Literatures on Nuclear Non-Proliferation and Middle Powers

Previous literatures on nuclear non-proliferation from middle power conceptualization have primarily focused on the verification of a certain state as a middle power, especially on its behavioral feature of niche diplomacy and norm practices. In addition, these literatures have put forth different ways to conduct the assessment of middle-powermanship on international nuclear diplomacy

which encompasses the interactions of international actors in various levels.

Maitre assesses the middle power's niche diplomacy through a comparative analysis of Japan, South Africa, and Kazakhstan from 1995 to 2018, with an analytic focus on the rationale and advantages of selecting nuclear diplomacy as their niche. The author broadly defines nuclear diplomacy as the interaction between various international actors including states, non-governmental organizations (NGOs), and individuals, on nuclear-related issues to achieve their respective interests. The proposed framework in defining middle powers related to nuclear diplomacy is based on the criteria of concrete involvement in the practice of non-proliferation norms, interest, attitude, and technical knowledge on nuclear issues. Each of the three case studies is examined on the core principles of international nuclear order – nuclear disarmament, non-proliferation, and peaceful use of nuclear energy – where the assessment is conducted on the criteria of legitimacy, stakes, and diplomatic achievements. Behind the middle powers' behavior of niche diplomacy, four main incentives of enhancing security, political status in the international system, economic gains, and identity exist. Maitre concludes that middle powers' hold potential to promote and legitimize the universalization of nuclear norms, as well as bridging the NWS and NNWS on deadlocked issues to reach compromises.¹⁹

Adopting a similar approach, Wyk analyzes South Africa's nuclear

¹⁹ Emmanuelle Maitre, "Nuclear Diplomacy: a niche diplomacy for middle powers," *Fondation pour la recherche strategique*, No. 8 (2018)

diplomacy in the framework of middle power conceptualization with a focus on norm construction and identity building. Through a chronological breakdown of South Africa's interaction with the International Atomic Energy Agency (IAEA) since the voluntary termination of nuclear weapons, the aspects of middle-powermanship such as commitment to and promotion of international norms and support for multilateralism is highlighted. Based on key events of South Africa's progressive relationship with IAEA and its niche diplomacy, the author illustrates South Africa's process of changing identity in accordance with its role on international nuclear norms (i.e. norm entrepreneur, norm enactment and digression, norm compliance) to support her evaluation on South Africa's securement of unique niche role in the international nuclear system.²⁰

Lee establishes an analysis of the ideal role of middle powers in the international nuclear non-proliferation regime through the case studies of Brazil, Argentina, and Egypt. His approach towards the concept of middle power is grounded in a liberal internationalist's perspective, thereby defining middle power based on their behaviors and attitudes toward non-proliferation. The selected cases, which are respectively considered as representative figures of regional leaders in South America and Africa, demonstrate the relationship on how the regional security dynamics and establishment of cooperation could contribute to non-proliferation at a global scale. The author highlights the

²⁰ Jo-Ansie van Wyk, "Nuclear diplomacy as niche diplomacy: South Africa's post-apartheid relations with the International Atomic Energy Agency," *South African Journal of International Affairs*, Vol. 19, No. 2 (2012):179-200

important role of middle powers in trust-building, niche strategy on nuclear diplomacy, and gap-bridging in the international non-proliferation system, and calls for South Korea's need to develop the diplomatic capacity in the field especially in regards to the North Korean nuclear issue and its consequences on Northeast Asia's security dynamics.²¹

2.3 Limitations of Precedent Studies

There exists myriad of studies on effective ways to strengthen the international nuclear non-proliferation regime where the common focus of the majority is geared towards diagnosing the problems of nuclear superpowers or instruments of the regime itself: in addition, there is a general tendency to approach the non-proliferation issues dichotomously between the perspectives of 'nuclear haves' and 'nuclear have-nots' within the non-proliferation scholarship. However, literatures that merge the issues of the non-proliferation regime and approaches of middle power conceptualization are at developing stages due to the complex and politicized nature of nuclear conflicts and difficulties in the categorization of middle powers in the international nuclear order. The literatures on middle powers in nuclear issues have sought to establish frameworks to assess and verify the state's status or performance as a middle power. Yet, when taking the previously mentioned debates on middle power studies into consideration, these

²¹ Su Seok Lee, "The Role of Middle Power under Nuclear Non-Proliferation Regime," *Journal of East and West Studies*, Vol. 21, No. 2 (2009): 81-108.

approaches are rather limited in the sense that they selectively and narrowly apply the scope of the concept, solely based on the behavior of the contended state. Such results in an unsustainable definition of middle power which leaves room for questions whether other candidate states could additionally be incorporated or not.

Furthermore, the existing literatures verify ‘why’ the country satisfies the criteria for middle power and ‘what’ potential function it could carry out within the international nuclear order, but fail to incorporate ‘how’ the country could enhance its performance to contribute further in the non-proliferation endeavors. More specifically, while these literatures acknowledge the advantages of middle powers on global nuclear issues and the need for more vigorous participations to resolve the problems through country-specific case studies, they do not concretely indicate how the relevant policymakers could achieve this end. Thus, a research established on more comprehensive framework of middle power concept that could not only verify and assess the middle-powermanship of certain states in the context of nuclear non-proliferation, but also suggest more specific political or diplomatic methods to enhance the capacity is required. The following section provides a breakdown of renowned theories of the IR academia in regards to middle power before narrowing down on the specific scope of analysis and selecting the most appropriate framework for the purpose of this thesis.

2.4 IR Theory Approaches to Middle Power Conceptualization

As shown previously, the definition of middle power has failed to reach

consensus among scholars and policy-makers despite the increasing number of case studies on both traditional and emerging middle powers. Concurring with Ping's argument that the primary cause for such failure is due to the proliferation of middle power definition without reference to preceding studies, this thesis conducts research building upon the established framework for middle power rather than producing a new version of the definition. In order to identify the most appropriate framework for analyzing the role of a middle power in a distinct international system, this section compares how the middle power concept is illustrated and approached in the main IR theories of realism, liberal institutionalism, and constructivism.

From a realist or neo-realist point of view, middle powers are best illustrated through the positional/hierarchical approach where quantifiable indicators of a state's material capability serve as the boundary points that differentiate them from superpowers and minor/small powers. Among Bernard Wood's five definitional illustrations of middle powers, 'free-riders' or 'stabilizer' best demonstrates the realist approach²², alongside the traditional definitions of middle power based on geographic and positional standards. Power is interpreted narrowly or simply as a sum of a state's material capacity in comparison to that of other states', and therefore, one of the most significant strengths of the positional approach is that it allows a comparison of different states based on this resulting hierarchy of power. Although more recent studies of the positional

²² Bernard Wood, "The Middle Powers and the General Interest," *NorthSouth Institute* (1988)

approach attempt to incorporate indicators beyond the military or economic capacity of a state, the aforementioned issue of objectivity and the difficulty of explaining the relationship between a state's material capacity and its behavior remains as the critical weakness for the realist's depiction of middle powers.

The liberal-institutionalist's way of perceiving middle powers is best explained through the behavioral approach. As Cooper, Higgot, and Nossal observed, middle powers could be defined through their typical behaviors – namely, the tendency to resort to multilateralism, promoting good international citizenship, and mediating in international conflicts - within the international system. According to Cooper, such tendencies of middle powers are only natural because there exists a significant gap in material capacity and influence between middle powers and superpowers; in order to overcome this relative deficiency, middle powers typically focus on niche diplomacy by concentrating their resources in the fields which they hold a comparative advantage of. Wood's conceptualization of 'good international citizen,' and Ravenhill's summary on middle power attributes as 'capacity, coalition building and credibility'²³ fit into this categorization of the concept. The perception of middle power from liberal-institutionalist's perspective, however, also holds several weaknesses. For one, the critics argue that the behavioral approach inevitably contains the circular reasoning error since the developed criteria of middle power are pre-set towards

²³ John Ravenhill, "Cycles of middle power activism: Constraint and choice in Australian and Canadian foreign policies," *Australian Journal of International Affairs*, Vol. 52, No. 3 (1998): 309-327.

the traditional middle powers such as Australia and Canada. Moreover, such approach not only fails to predict how the middle power will act, but also fails to differentiate ‘middle powers with material capacity’ from ‘middle powers without material capacity’ as Hynek pointed out²⁴.

Although not mutually exclusive from the behavioral approach, the Constructivist or neo-Kantian illustration of middle power is strongly associated with the identity-based and functional approach. According to Carr, the status or labeling of middle power should be acknowledged when the state asserts itself as one.²⁵ Proponents of the constructivist based approach such as Finnemore and Sikkink argue that by understanding the self-conception of a state in the international system, certain behavioral pattern of the state is anticipated since the self-assigned identity presumes the most effective way to use its resources for the national interest²⁶. In this context, Wood’s definition of middle power as ‘functional leader’ best satisfies the constructivist’s way of understanding the concept. Nonetheless, conceptualizing middle powers through the identity-based model is limited in providing a sustainable definition, not to mention the unanswered question it leaves on how to perceive the cases of self-claimed yet

²⁴ Nikola Hynek, “Canada as a middle power: conceptual limits and promises,” *The Central European Journal of Canadian Studies*, Vol. 4, No. 1 (2004): 33-43.

²⁵ Andrew Carr, “Is Australia a middle power? A systemic impact approach,” *Australian Journal of International Affairs*, Vol. 68, No. 1 (2014): 70-84.

²⁶ Martha Finnemore and Kathryn Sikkink, “Taking Stock: Constructivist Research Program,” *Annual Review of Political Science*, Vol. 4, No. 1 (2004): 391-416.

incompetent middle powers.

Framework for Middle Power's Role Analysis

Taking respective strengths and weaknesses of different approaches toward middle power conceptualization into consideration, it could be concluded that while certain features of middle powers - whether it be material capacity, unique pattern of behavior, or internal attribute such as identity - may be emphasized in accordance with the purpose of a research, attempting to establish a standardized frame of criteria in defining middle powers universally is rather absurd. As Bae²⁷ and Kříž et al. have argued, the concept of middle power should be comprehensively considered as a state that satisfies the complex criteria of a certain level of material capacity, unique behavior, and self-identity depending on the analytic focus. In this thesis, the conceptualization of middle power through 'complex approach' is adopted, for it not only encompasses the main elements of the key approaches (positional/hierarchical, behavioral, identity-based/functional) but also overcomes the respective problems; the complex approach towards middle power conceptualization could be alternatively represented by analyzing 'roles' of middle power.

By definition, roles refer to 'socially expected *behavior* pattern usually determined by an individual's status in a particular society.' Roles can also be understood as 'a *function* or part performed especially in a particular operation

²⁷ Young-Ja Bae, "Formation of South Korea's Middle Power Status: A Case of South Korea's Acquisition of Permanent Observer Status in Arctic Council," *National Strategy*, Vol.22, No.2 (2016): 95-120

or process’²⁸ and ‘a *position* or purpose that something has in a situation, organization, society, or relationship.’²⁹ Therefore, discussion of roles of middle power may imply a state’s status, expected function, or behaviors depending on its capability within the international system. In this regard, the role-theory model of Cameron Thies is the most appropriate analytical framework as it incorporates the abovementioned aspects of middle powers.³⁰ Grounded in Gary Goertz’s three-level conceptualization model, Thies’ role-theory framework sets the basic level of middle power concept as an ontological status; the basic level is constituted by the secondary level, which is composed of various attributes that are considered necessary and sufficient. Lastly in the tertiary level, different types of indicators that are substitutable with other attributes under the family resemblance structure support the secondary level in a particular sequence. When various types of possible attributes from middle power literature are synthesized, the analytic framework could be illustrated as the Figure 1 diagram. In contrast to defining middle powers simply based on the internal attributes, this approach incorporates the different combinations of these attributes as mandatory and acceptable conditions, in addition to taking other states’ objective acknowledgment of the middle power status into consideration.

²⁸ <https://www.merriam-webster.com/dictionary/role>

²⁹ <https://dictionary.cambridge.org/dictionary/english/role>

³⁰ Cameron Thies and Angguntari Sari, “A Role Theory Approach to Middle Powers: Making Sense of Indonesia’s Place in the International System,” *Contemporary Southeast Asia*, Vol. 40, No. 3 (2018): 397-421

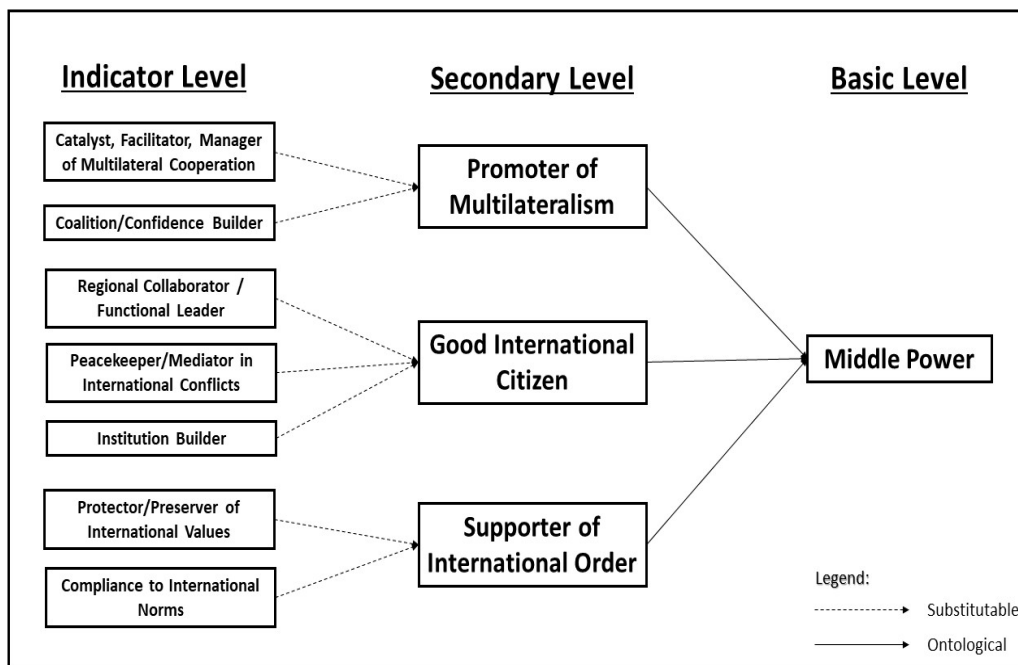


Figure 1. Middle Power Role Analysis Framework based on Goertz's Three-Level Diagram

2.5 Research Method

This research is exploratory and policy-oriented which seeks to define and analyze the role of middle powers in the international nuclear non-proliferation regime by application of the role-theory framework on nuclear issues, utilizing South Korea as a case study. Additionally, in order to supplement the common limitations of precedent studies which fail to suggest concrete measures on 'how' to advance the country's middle-powermanship, this research aims to develop policy recommendations to prescribe practical policies.

The structure of unfolding stream of the research is as follows: 1) based on the content analysis of theoretic debates and scholarship on the issues of

nuclear non-proliferation, different cases of challenges in the contemporary nuclear non-proliferation landscape, as well as middle powers' resolute potential on the challenges are categorized into three themes in accordance with the core pillars of the regime, which are nuclear non-proliferation, disarmament, and peaceful use of nuclear energy; 2) drawing upon the role analysis framework, verification of South Korea as a nuclear middle power and assessment of its performance as a middle power corresponding to the categorized fields is conducted; 3) in reference to the resulting analysis, concrete policy recommendations to bolster South Korea's nuclear middle-powermanship – thereby contribute to strengthening the non-proliferation regime – and the potential implications of each measure are proposed.

This thesis primarily depends on the qualitative methodology which incorporates theoretical debates and testing, analysis of underlying problems of the nuclear non-proliferation regime, and case study through document research. For document research, content analysis is conducted largely on both primary and secondary data. The data gathering for analysis is utilized through domestic libraries and online search engines, which includes diverse documents such as government publications and statements, white papers, NPT review conference documents, IAEA reports and Information Circulars (INFCIRCs), treaties from US Department of State Archive, and relevant scholarly journals. This research also makes use of credible newspaper articles and institutional reports to link the theoretic analysis with current and prospective issues of the reality in the contemporary nuclear landscape, and to establish policy recommendations.

2.6 Rationale for South Korea as Case Study

South Korea was specifically chosen as a case study for analyzing the middle power's role in the international nuclear non-proliferation regime, for it possesses distinct uniqueness on identity, capacity, and status in comparison to other traditional Western middle powers on nuclear issues such as Canada and Australia, and Japan which exceptionally holds enrichment and reprocessing (ENR) capabilities as a NNWS. Since the direct mention of the middle power concept among domestic policymakers and experts in 2008 under Lee Myung-Bak administration's slogan of 'Global Korea,' the discussion and studies on middle power policy as South Korea's national strategy began to develop in reference to the country's increasing footprints on the global stage such as hosting the G20 Summit and the 2nd Nuclear Security Summit in 2012. This trend is an on-going one and the notion of middle power diplomacy as a national strategy on various fronts - such as mediating and balancing between US and China, gap-bridging with agenda-based leadership on North Korean nuclear issues, establishing regional leadership for maritime security cooperation – continues to reverberate within the policy and scholarly circles of South Korea.

When confining the scope for South Korea in the application of middle power concept to nuclear issues, the conclusion of nuclear export contract to the UAE in 2009 serves as the starting point, as it began to draw international highlights on South Korea as the successful exemplary case of the global non-

proliferation regime's efficacy.³¹ According to World Nuclear Association's latest nuclear electricity generation statistics³², South Korea is ranked 5th subsequent to US, France, China, and Russia which all are NWS; its unique status, in consideration to the competent capacity to construct and export nuclear reactors as a non-Western NNWS, perplex security dynamics and threats of Northeast Asia with its neighboring states' nuclear weapons, and one of world's top nuclear energy usage, accounts for a thriving case of non-traditional middle power in the contemporary international nuclear order. Nonetheless, it is also important to note that the critics question South Korea's middle power status and capacity, based on its reactive rather than proactive behavior as well as insignificant diplomatic achievements; the primary argument put forth is that the notion of middle power for South Korea is merely a self-claimed rhetoric instead of a practical strategy or a genuine identity.

Accordingly, this paper selects South Korea as a case study to illustrate what it means to be a middle power in the international nuclear regime and how it could contribute to contemporary nuclear issues drawing upon the role-theory framework, and suggest policy measures to advance the middle-powermanship based on the analysis result.

³¹ The efficacy refers to the intended nature and purpose of the global non-proliferation regime which could be summarized as preventing proliferation of nuclear weaponry through international regulations and export controls while supporting the trade and transfer of relevant technology for the civil use of nuclear energy. More specific details are examined in Chapter III.

³² Source: IAEA Power Reactor Information System and World Nuclear Association Reactor Database <https://www.world-nuclear.org/information-library/facts-and-figures/nuclear-generation-by-country.aspx>

Chapter III

State of Art: Global Non-Proliferation Regime and Underlying Issues

3.1 Overview of Global Non-Proliferation Regime and Strategy: Historic Perspective

The constructing of the current global nuclear order and the blueprint for the non-proliferation regime originates back near the end of World War II. In the wake of the Soviet Union (SU)'s successful nuclear explosive test "First Lightning" in 1949, the international realm entered the era of Cold War as the tensions and antagonistic competition between the two great powers began to arise. Given the uncooperative environment, the world witnessed an uncontrolled proliferation both vertically (as both US and SU raced to increase their nuclear stockpiles) and horizontally (as the United Kingdom and France acquired nuclear weapons each in 1952 and 1960) up to 1960s. During these years, containing proliferation was less of a priority on both sides' political agenda as the two main players competed for dominance in mutual fear of one another³³; the US approach changed from its initial strategy based on restriction and secrecy to supporting the nuclearization of the allies by establishing more enhanced nuclear cooperation with the UK in 1958 and the SU also took a similar approach by providing assistance to People's

³³ Published works such as George Thomson's *Hydrogen Bomb: the Need for Policy* (1950), William J. Nagle's *Morality and Warfare: the State of the Question* (1960) and John C. Bennet's *Nuclear Weapons and the Conflict of Conscience* (1962) reflect US' growing fear and concerns for future with the development of hydrogen bombs and SU's nuclearization.

Republic of China (PRC) which eventually led to their successful nuclear test in 1964.

Nevertheless, the near-catastrophic incident of the Cuban Missile Crisis of 1962 quickly changed the nuclear proliferation paradigm. The previously nonchalant attitude towards proliferation was replaced with 'nuclear pessimism' as both sides not only understood the inherent dangers of nuclear proliferation but also realized the fact that the actual use of nuclear weapons will be more likely in similar conflicts should more states nuclearize in the future. In addition, various societal voices of nuclear pessimism grew and began to pressure governments to reduce the potential dangers associated with the development of nuclear weapons: at the international level, the Non-Alignment Movement (NAM) found in 1961 demanded similarly. While all these factors account for the driving force behind the changing paradigm of proliferation, more practical changes for non-proliferation policies were achieved largely due to the perceptual change of the US and SU based on the mutual understanding of their common interest in preventing the further spread of nuclear weapons.

The first important step towards the making of the non-proliferation regime was the Limited Test Ban Treaty (LTBT) in 1963 by the US, UK, and SU. Although the further attempts between the US and SU to sign a more comprehensive nuclear non-proliferation treaty failed – where the widening disparity from SU and PRC (Sino-Soviet Split) played the key factor for this opportunity – and the evaluation of LTBT remains a debatable topic in terms of its effectiveness for non-proliferation, its value as the first multilateral effort

towards non-proliferation and consequently decreased level of nuclear fallouts should not be undermined. PRC's nuclearization in 1964 furthered the acceleration of strengthening the non-proliferation efforts as they condemned the proliferation doctrine from Beijing in concern for sending the wrong-encouraging signals to other Afro-Asian states to progress towards nuclearization to 'cast off' imperialist control.

The initial draft on the NPT between the US and SU that was proposed to the Eighteen Nation Disarmament Committee sponsored by UN in 1966 reflects the perspective change of the superpowers; as both sides realized the scope of approach towards the proliferation concerns needed to be extended from the US-Soviet problem, the previously discriminatory structure of global nuclear order was to be balanced with the introduction of the idea 'grand bargain' where the nuclear-weapon states (NWS) would work towards disarmament 'Article VI' and cooperating for transfers of peaceful nuclear technologies 'Article IV' albeit the controversies remain up to date. While the elements of hypocrisy and what seems like a half-hearted commitment on the NWS' part in the treaty still serves as the primary weakness of the regime, the world began to adapt to the new global strategy *non-proliferation by persuasion* since NPT's entry into force in 1970; in the notion of *non-proliferation by persuasion* – where the NWS persuade NNWS to forgo the weapons option in return for disarmament promises and technology transfer pledges – the idea of reassurance and participation is evaluated as the important components. Such was more efficient in regards to inviting more states to abide by the newly set norm of non-proliferation, in contrast to *non-*

proliferation by coercion from the Cold War era where the superpower's diplomatic pressure or means of physical force to non-allies and reassurance of alliance guarantees with the extended deterrence capabilities for the allies played the key role; it should be noted that *non-proliferation by coercion* strategy, however, was not the favored option in general throughout the history due to its seriousness and sensitivity except for few cases such as US-Soviet action against China's nuclear facilities before 1964³⁴, the idea of nuclear rollback policies from Gilpatric Committee report³⁵ that also targeted main allies of the US, and Israel's covert operation against the Egyptian scientists in the 1950s and 1960s, and military attack on Iraq's reactors in 1981.

Despite the efforts, the NPT system still encountered voices of criticisms and skepticism not only on the discriminatory nature of the treaty and doubtful commitment of the NWS, but also on its effectiveness against non-proliferation. For instance, France and China were not completely convinced with the idea and stood apart in spite of the legal NWS status in the beginning; several future candidates for nuclearization such as Japan and West Germany did not ratify the treaty until the mid-1970s and other states such as Brazil, India, Pakistan, and Israel did not join. Moreover, the technology transfers for the peaceful use of nuclear energy with the 'inalienable right' of states opened up a new pathway of

³⁴ William Burr & Jeffrey T. Richelson, "A Chinese Puzzle", *Bulletin of the Atomic Scientists*, Vol. 53, No. 4 (1997): 42-47

³⁵ Johnson Library, National Security File, Committee File, Committee on Nuclear Proliferation, Report (Final, 12/21/65), Box 8. Secret.

'nuclear hedging' for potential proliferation since the recipient states could acquire nuclear weapon over short time due to the dual-use nature of the technology and IAEA's imperfect verification instruments. The important incident that stimulated the change in the global strategy for non-proliferation was India's 'peaceful nuclear test' in 1974. In addition to India's nuclearization, other factors such as the expected growth of global nuclear energy production, subsequently growing challenges for the US monopoly in the civil nuclear technology sector, and increasing trade outside the Communist bloc contributed to the emergence of "*non-proliferation by denial.*" In contrast to previous "*non-proliferation by persuasion*" where the focus was to persuade the demand side of the trade, the new strategy focused to hinder the spread from the supply side by limiting the transfer of the sensitive dual-use technologies and components. The development of strengthened export controls, promotion of proliferation-resistant technologies, and creation of the Nuclear Suppliers Group (NSG) in 1976, and the International Nuclear Fuel Cycle Evaluation Program (INFCEP) in 1977 reflect these changes within the non-proliferation regime. (Popp, 2014)

All three types of non-proliferation strategies *non-proliferation by coercion, persuasion, denial* are still sustained within the non-proliferation regime often in combination. It does not come with a surprise that the politics of NWS and the influences of major powers in concern have been the primary determinant factor behind the shaping of non-proliferation strategy at a global scale as well as the development of the regime. As shown through the development of global nuclear order and non-proliferation strategies, the de facto

mechanism of the international nuclear governance and non-proliferation measures have been engineered by superpowers and NWS. While additional instruments and legal framework of the non-proliferation regime were established to enhance the effectiveness – which are elaborated in the following section – since NPT’s entry into force in 1970, the evaluation of the regime’s overall performance in preventing the spread of nuclear weapons and the view towards the regime’s inherent nature vary³⁶. Given the complex and multi-dimensional nature of the nuclear issues and for a number of various reasons such as issues of nuclear sovereignty, security and alliance politics, and global North versus South, objective evaluation on the regime’s performance goes beyond the scope of this paper; however, both persisting and emerging challenges associated with each of the three pillars of the non-proliferation regime are examined in the upcoming section, as it is mandatory in understanding how and why the contribution of middle power holds merits as potential solutions.

3.2 Core Pillars and Structure of the Regime: Roles and Responsibilities

This section explores a structural blueprint of the non-proliferation regime based on the three core pillars of NPT and subsequently developed treaties and institutions. The composition of the regime is visualized as Figure 2, and the

³⁶ For instance, South Africa’s voluntary dismantlement of nuclear weapons in 1991, cases of Belarus (1996), Kazakhstan (1995), and Ukraine (1994) transferring and eliminating nuclear warheads to Russia are recognized as significant achievements of the non-proliferation regime. In contrast, the additional development of nuclear weapons from non-signatories such as India, Pakistan, North Korea (withdrawn after accession), and Israel (strategic ambiguity) serve as the counter evidence.

respective roles and responsibilities of the components are examined. It is important to note that the intended purpose and role of some of the regime's components cover more than one aspect of the three pillars: for instance, the relevant instruments of export control could be understood as measures to uphold non-proliferation (2nd pillar) and peaceful use of nuclear energy (3rd pillar) within the regime. For the convenience of understanding, the components are categorized into measures to prevent 'horizontal and vertical proliferation, and others.' Horizontal proliferation refers to "nation-states or non-state entities that do not have, but are acquiring, nuclear weapons or developing the capability and materials for producing them," while vertical proliferation refers to "nation-states that do possess nuclear weapons and are increasing their stockpiles of these weapons, improving the technical sophistication or reliability of their weapons, or developing new weapons."³⁷ Others incorporate additional measures relevant to each pillar such as various bilateral cooperation agreements and region-specific treaties.

³⁷ Victor Sidel and Barry Levy, "Proliferation of nuclear weapons: opportunities for control and abolition," *American journal of public health*, Vol. 97, No. 9 (2007): 1589–1594

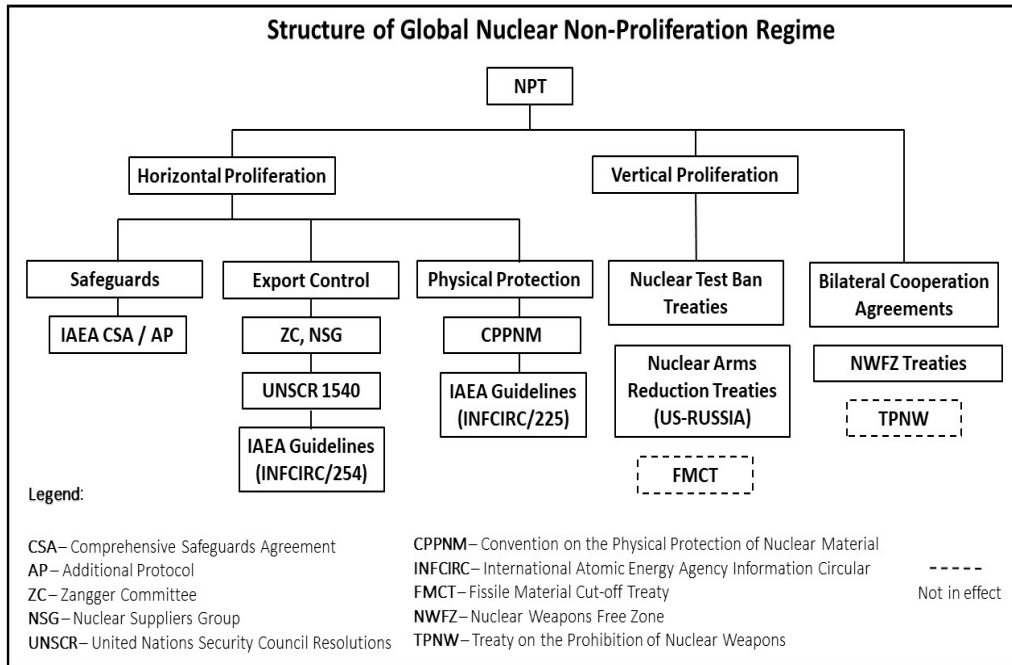


Figure 2. Structural Composition of the Nuclear Non-Proliferation Regime³⁸

Measures Responsible for Preventing Horizontal Proliferation

The notion of preventing horizontal proliferation best corresponds with the first pillar ‘non-proliferation’ of NPT. The relevant measures for preventing horizontal proliferation could be divided into three types as safeguards, export controls, and physical protection. The IAEA is the primary, independent, and intergovernmental organization in charge of overseeing the peaceful use of

³⁸ Diagram modified by the author in reference to; Jang-ryul Moon, Korea National Defense University, “Transition of Nuclear Strategy and Global Non-Proliferation Regime,” (2009) [PowerPoint Slides] https://nuclear.kaist.ac.kr/nu_curriculum6_1/6363 ; Bong-geun Jun, Institute of Foreign Affairs and National Security, “Preparing for Nuclear Renaissance and the Korean Model,” (2010) [PowerPoint Slides] <https://www.slideserve.com/naeva/bong-geun-jun-ph-d-ifans-seoul>

nuclear energy as the inspectorate through safeguards agreements and additional protocols. Under Article III of NPT, all NNWS parties of the treaty must conclude a Comprehensive Safeguards Agreement (CSA)³⁹ and accept IAEA's application of technical measures on their nuclear facilities and materials to verify its legal commitment to use nuclear energy strictly for peaceful purposes; all five NWS which are not required to conclude CSA, have voluntarily signed both CSA and Additional Protocol (AP). The implementation of safeguards – IAEA's collection and evaluation of safeguards-relevant information on the state's nuclear programme, development of state's safeguards approach, evaluation of safeguards activities, and conclusion of implementation cycle – is established on the annual cycle and the IAEA Secretariat reports to Board of Governors composed of IAEA member states. The Model Additional Protocol is a non-mandatory and additional tool for safeguards measures contained in INFCIRC/540 (corrected), and could only be concluded in conjunction with a safeguards agreement. Through the adoption of AP, the IAEA obtains expanded quantity and quality of information on a state's nuclear fuel cycle and relevant activities, authority for inspection by gaining access to both declared and undeclared facilities on short notice, administrative arrangements for simplified visa process for IAEA inspectors, and permission for environmental sampling if

³⁹ “The Structure and Content of Agreements Between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons,” INFCIRC/153 (Corr.)
<https://www.iaea.org/sites/default/files/publications/documents/infcircs/1972/infcirc153.pdf>

the inspector deems necessary.⁴⁰

Zangger Committee (ZC) established in 1971, and Nuclear Suppliers Group (NSG) in 1974, are the two major regimes of multilateral arrangements which establish guidelines for administering nuclear export controls. The primary role of ZC is to interpret Article III.2 of the NPT ‘*NPT parties undertake not to provide ‘source or special fissionable material, or equipment or material especially designed or prepared (EDP) for the processing, use, or production of special fissionable material’* and identify the stated EDP goods: as of 2019, ZC consists 39 member states and continues to update the established ‘Trigger List’ of items that are subject to the safeguard inspections of IAEA. While the mandate of ZC remains bound to the interpretation of NPT Article III.2, that of NSG is more concerned with the implementation of guidelines for nuclear exports and nuclear-related exports. Through the consensus-based mechanism, NSG aims to govern the relevant items that are especially designed or prepared for nuclear use – which include nuclear material, reactors and equipment, non-nuclear elements for reactors, machinery and components for the reprocessing, enrichment, and conversion of nuclear material, and associated technology for these items – as well as the relevant dual-use items and technologies, in order to ensure non-proliferation through facilitating peaceful nuclear trade⁴¹. Two sets of guidelines

⁴⁰ INTERNATIONAL ATOMIC ENERGY AGENCY, *Legal Framework for IAEA Safeguards*, IAEA, Vienna (2013).

⁴¹ Mark Hibbs, “The Future of the Nuclear Suppliers Group,” *Carnegie Endowment for International Peace*, Washington D.C., (2011)

– Part 1 *Guidelines for Nuclear Transfers*, and Part 2 *Guidelines for transfers of nuclear-related dual-use equipment, materials, software, and related technology* - for international nuclear exports are published by the IAEA as INFCIRC/254.⁴² It should be noted that the NSG clarifies these guidelines as minimum conditions of supply, and these are not legally-binding.

Under the current international system, the only legally-binding non-proliferation instrument that directly dictates the states to implement the relevant trade controls is the United Nations Security Council Resolution (UNSCR) 1540. Unanimously voted in 2004, UNSCR 1540 requires all states to “adopt and enforce appropriate laws to...prevent the proliferation of [nuclear, chemical, or biological] weapons and their means of delivery to non-State actors, in particular for terrorist purposes” as well as refraining from “providing any form of support to non-State actors that attempt to develop, acquire, manufacture, possess, transport, transfer or use [nuclear, chemical, or biological] weapons and their means of delivery.”⁴³ In brief, the states are required to establish effective jurisdiction, control, and supervision for the trade in nuclear-related items, as well as maintaining it. While UNSCR 1540 states exact kinds of applicable activities

⁴² Part 1 clarifies more general restrictions on the use of EDP items, nuclear-related materials, equipment, and technology that are subject on the trigger list, and required levels of physical protection from the recipient to guarantee the formal assurance of the non-use. On the other hand, the scope and extent of Part 2 is wider than that of Part 1 in terms of the quantity of the covered items as it is concerned with the dual-use items that could be utilized in the nuclear explosion or unsafeguarded nuclear activities. The guidelines and technical annexes are updated periodically. (<https://www.nuclearsuppliersgroup.org>)

⁴³ <https://www.un.org/disarmament/wmd/sc1540/>

and elements for control, it does not state the legislative basis of the international trade control regime. In other words, a great level of autonomy is given for states in their implementation – border controls, law enforcements, the establishment of end-user controls, etc. - to oblige the resolution and due to the different levels and styles of implementation from state to state, there exist certain limits for the resolution to comprehensively oversee the inter-state activities to guarantee non-proliferation.

The Convention on the Physical Protection of Nuclear Material (CPPNM) published by the IAEA as INFCIRC/274 and its Amendment INFCIRC/274/Rev.1/Mod.1 are the only legally binding arrangements for physical protection of nuclear materials for peaceful purposes. As the provisions of CPPNM were only associated with the state's responsibilities for establishing physical protection measures for international transports, the newly adopted Amendments in 2016 additionally incorporates the relevant requirements of physical protection for domestic facilities, transport, and storage. The primary objective of the physical protection measures is to prevent theft, unauthorized use, and smuggling of nuclear materials, as well as sabotage and terror on nuclear facilities from both state and non-state actors. Under the convention, the parties are not only obligated to establish and implement legislation for physical protection, but also to cooperate and share information in case of theft of nuclear

materials.⁴⁴

Measures Responsible for Preventing Vertical Proliferations

The non-proliferation regime's arrangements for preventing vertical proliferation is most associated with the second pillar 'disarmament' of the NPT. The core instruments for preventing vertical proliferations are categorized into nuclear test ban treaties, nuclear arms reduction treaties, and Fissile Materials Cut-off Treaty (FMCT) albeit the last has not entered into force yet.

As introduced in section 3.1 of the paper, the LTBT from 1963 initially signed by US, UK, and SU before its opening for signature serve as the foundational first step of international nuclear arms reduction and non-proliferation arrangements. As of 2018, 125 states have ratified or acceded to the treaty and under the provisions of LTBT, the state parties are prohibited to initiate "any nuclear weapon test explosion, or any other nuclear-explosion... in the atmosphere; beyond its limits, including outer space; or underwater, including territorial waters or high seas; or in any other environment if such explosion causes radioactive debris to be present outside the territorial limits of the State" as stated by Article I.⁴⁵ The LTBT does not cover the explosion tests conducted underground. Subsequently, the US and SU took additional steps and signed the

⁴⁴ Convention on the Physical Protection of Nuclear Material. (CPPNM, 1979)
<https://www.iaea.org/publications/documents/infcircs/convention-physical-protection-nuclear-material>

⁴⁵ Treaty banning nuclear weapon tests in the atmosphere, in outer space and under water (LTBT, 1963) from <https://treaties.un.org/pages/showDetails.aspx?objid=08000002801313d9>

Threshold Test Ban Treaty (TTBT) in 1974 and the Peaceful Nuclear Explosions Treaty (PNET) in 1976, which entered into force in 1990. Together, TTBT and PNET restrained both parties from conducting nuclear explosion tests that exceed a 150 kilotons (kt) yield and established a regulatory system to oversee the American and Soviet underground explosions, as the two parties were obligated to exchange technical data for verification and calibration purposes. Yet, the distinction between a nuclear explosion for weapon purpose and peaceful purpose is unclear.⁴⁶ Lastly, Comprehensive Nuclear Test Ban Treaty (CTBT) initially negotiated in 1996 at the Conference on Disarmament (CD) in Geneva aims to “prohibit States Parties from carrying out any nuclear explosion, ... [and from] any encouragement of or participation in the carrying out of any nuclear explosion.”⁴⁷ Currently, 184 states have signed and 168 states have ratified the treaty including the three NWS Russia, France, and the UK; however, in order for the treaty to enter into force, 44 specific nation-states (Annex 2 States) which held nuclear technology prior to the negotiation and participated in the negotiation of CTBT must sign and ratify the treaty. As the 8 of Annex 2 States have either not signed or ratified⁴⁸ and in accordance to Article XIV, CTBT

⁴⁶ Treaty between the United States of America and the Union of Soviet Socialist Republics on the limitation of underground nuclear weapon tests (TTBT, 1974) from <https://2009-2017.state.gov/t/isn/5204.htm>

Treaty between the United States of America and the Union of Soviet Socialist Republics on underground explosions for peaceful purposes (PNET, 1976) from <https://2009-2017.state.gov/t/isn/5182.htm>

⁴⁷ Comprehensive Nuclear Test Ban Treaty (CTBT, 1996) from <https://www.ctbto.org/the-treaty/treaty-text/>

⁴⁸ The missing Annex 2 States are Egypt, North Korea, Pakistan, India, Iran, Israel, China, and

Organization holds conferences to examine the required measures to accelerate the ratification process bi-annually.

Another branch of the regime's measure to prevent vertical proliferation is reflected through the bilateral arms reduction treaties between the US and Russia. As the top two states in the world, by far, with the most number of nuclear warheads and explosion tests, the US and SU have negotiated and signed several arms reduction treaties such as Strategic Arms Limitation Talks (SALT I, II / expired), Anti-Ballistic Missile Treaty (ABM / now terminated), Intermediate-Range Nuclear Forces Treaty (INF / now terminated), Strategic Offensive Reductions Treaty (SORT / replaced by New START), and New Strategic Arms Reduction Treaty (New START). Under New START, both US and Russia have engaged in mutually-verified reduction of nuclear weaponry down to 1,550 nuclear warheads, 700 deployed intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and heavy bombers, and "800 deployed and non-deployed ICBM launchers, SLBM launchers, and heavy bombers equipped for nuclear armaments."⁴⁹

Adopted by the United Nations General Assembly (UNGA) as Resolution 48/75 L⁵⁰ in 1994, the FMCT is a proposed international agreement,

US.

⁴⁹ Strategic Arms Reduction Treaty (New START, 2010) from <https://www.state.gov/new-start/>

⁵⁰ Non-discriminatory, multilateral and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices (FMCT, 1994) from <https://undocs.org/en/A/RES/48/75>

yet in the process of negotiation, that aims to prohibit weapon-grade fissile materials for nuclear explosive devices, namely the highly enriched uranium (HEU) and plutonium. As the NNWS of NPT are not approved to produce or acquire weapon-grade fissile materials, the primary target of FMCT are both NWS of NPT and NWS of non-NPT signatories. The discussions to progress further on establishing the treaty has been continuing in CD and NPT Review Conferences for many years, however, the stalemate on the issues of 1) the scope and mechanism of IAEA for verification on the state parties' compliance, and 2) whether to apply the 'cut-off' to future production only or on both current and future production, have retarded the discussion to progress further. Two consultative meeting has occurred in 2017 and 2018, led by the 'High-level fissile material cut-off treaty expert preparatory group,'⁵¹ however, apart from reconfirming the urgency and necessity to accelerate the negotiations process and gathering the stance of member states, the achieved results are so far insignificant.⁵²

Additional Instruments of the Non-Proliferation Regime

Other arrangements of the regime incorporate bilateral nuclear cooperation agreements which are most associated with upholding the third pillar of NPT

⁵¹ Treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices, (UNGA Res.71/259) from <https://undocs.org/a/res/71/259>

⁵² High-level FMCT expert preparatory group chair's summary on second session (UNGA AC.288) from <https://undocs.org/A/AC.288/Pg/4>

‘peaceful use of nuclear energy,’ and region-specific treaties. TPNW is also categorized under ‘other arrangements’ for it has not entered into force and none of the states with nuclear weapons are expressing support for the treaty.

Although the level of requirement and compulsoriness vary from state to state, the majority of activities involved for civil use of nuclear energy such as nuclear plant construction, operation, financing, fuel supply, nuclear resource trades, knowledge exchange, training, decommissioning and waste management, technology research and development, are all accomplished on the basis of nuclear cooperation agreements (NCAs). According to one of the recent studies on international technological nuclear cooperation⁵³, the networks for NCAs are generally dominated by the US, Russia, France, South Korea, China, and Japan, where the first two states are the most dominant states in reference to the number and types of NCAs. The bilateral NCAs and consequently practiced norms for non-proliferation reflect the core pillars of NPT as it acknowledges the universal rights of states to access the technology without the proliferation risks.

In addition to the global and bilateral arrangements of the non-proliferation regime, there exist region-specific measures that constitute NWFZ. Currently, there are five NWFZ based on the respective treaties as follows: Latin America and the Caribbean “Treaty of Tlatelolco in 1967,” South Pacific “Treaty of Rarotonga in 1985,” Southeast Asia “Treaty of Bangkok in 1995,” Africa

⁵³ Jesscia Jewell, Marta Vetier, & Daniel Garcia-Cabrera, “The international technological nuclear cooperation landscape: A new dataset and network analysis,” *Energy Policy*, Vol. 128 (2019): 838–852.

“Treaty of Pelindaba in 1996,” and Central Asia “Treaty of Semipalatinsk in 2006.” The NWFZ treaties do not prohibit the civil use of nuclear energy and require state parties to conclude CSAs with the IAEA.

TPNW was adopted in the 2017⁵⁴ UN Conference to negotiate a legally-binding arrangement for prohibition and total elimination of nuclear weapons. Under the provisions, the state party is comprehensively forbidden from any activities related to nuclear weapons; Article I of TPNW states that state party is prohibited to “develop, test, produce, manufacture, otherwise acquire, possess or stockpile...transfer to any recipient...receive the transfer of or control over...use or threaten to use...allow any stationing, installation or deployment of” any nuclear weapons. In addition, the state party is required to conclude CSA with the IAEA in reference to NNWS of NPT, and nuclear armed states signing the treaty are required to eliminate the nuclear weapons over a negotiated time period, as well as verify with a competent international authority that is yet to be determined. TPNW enters into force after the 50th state’s ratification, acceptance, approval or accession; so far, 36 states have ratified. In the voting of draft TPNW in 2017, none of the states with nuclear weapons, members of North Atlantic Treaty Organizations (NATO), and states of military alliance with NWS did not participate.⁵⁵

⁵⁴ Treaty on the Prohibition of Nuclear Weapons (UNGA Conf.229/2017/8) from <https://undocs.org/A/CONF.229/2017/8>

⁵⁵ Voting Results of “United Nations conference to negotiate a legally-binding instrument to prohibit nuclear weapons: Second Session” (2017) from <https://s3.amazonaws.com/unoda->

3.3 Contemporary Challenges in Global Nuclear Landscape

This section analyzes two distinct cases of contemporary issues in the global nuclear landscape, in order to highlight the significance of middle powers' role and necessity of their contribution to conflict settlement in the non-proliferation regime. The first case discusses the prolonged contestation between the 'Nuclear-Haves' and 'Nuclear-Have-Nots' on the issue of priority in the three pillars of the regime. The 'Nuclear-Haves' perceive the fundamental nature of the regime as the arrangement to prevent further proliferation of nuclear arms, and therefore, have been prioritizing the non-proliferation function of the regime before progressing towards disarmament and promoting the peaceful use of nuclear energy; on contrary, the 'Nuclear-Have-Nots' argue for the balanced pursuit of the three, as reflected in their criticisms on the slow-paced disarmaments of NWS, inherent inequality of NPT, and behavior of technological colonialism on certain NWS. The second case comprehensively explores the recent developments in global civil nuclear market where more geostrategic and politicized competition among nuclear vendors is observed. Under the current structure of the regime, both cases of conflict are in a dichotomous political stalemate as the former involves 'Nuclear Haves' and 'Have-Nots,' and the latter involves Western and Non-Western vendors. Against this backdrop, the ideal role of middle powers in problem solving and the viable areas for their contribution are examined.

Issue of Priority: Nuclear Haves' Disarmament vs. Nuclear Have-Nots' Non-Proliferation

Since its entry into force in 1970, parties to NPT have been organizing the NPT Review Conference (NPT RevCon) every 5 years to discuss future agendas and review the implementation of previous meeting results. Although the adoption of the final resolution based on consensus in the RevCon is not legally-binding, it holds a political significance as the members execute domestic policies to abide by the conference results, and thereby furthering the legitimatization of international non-proliferation norms. For instance, in 2000 NPT RevCon, the parties have adopted the 13 steps which were the set of 'practical steps for the systematic and progressive efforts' to better implement Article VI of NPT⁵⁶; in 2010 NPT RevCon, the states agreed upon the 64-items action plan on the issues of nuclear disarmament, security assurance, nuclear testing, fissile materials management, non-proliferation, and the peaceful use of nuclear energy.⁵⁷ Notwithstanding the implications, the success and failure of RevCon have been traditionally determined by the adoption of final resolution. In this regard, the 64 action plan from the 2010 NPT RevCon was exceptionally significant, as it required the parties to take specific and measurable means to endorse the three pillars of NPT with a timeline for the first time.⁵⁸ Throughout the history, the

⁵⁶ Final Document of the 2000 Review Conference, Part I (14) from <https://www.un.org/disarmament/wmd/nuclear/npt2000/final-documents/>

⁵⁷ Final Document of the 2010 Review Conference, Part I (19-29) from <https://www.un.org/en/conf/npt/2010/>

⁵⁸ Deepti Choubey, "Understanding the 2010 NPT Review Conference," Carnegie Endowment for International Peace (2010)

conference has failed to adopt the final resolution four times out of nine; in 1980, 1990, and 2005, the parties could not reach consensus on the issue of NWS' disarmament, and in 2015, the additional issue of unequal standards constrained the conference from concluding the final resolution. The following section provides an analysis of the manifest fault lines – the issue of disarmament and universal application of the NPT standards - in the non-proliferation regime between the NWS and NNWS which became prominent throughout the four failures of RevCons.

While the issue of nuclear disarmament has been at the center of the regime's dispute since the establishment of NPT in 1970, it should be noted that the failure of NPT RevCon in 1980 and 1990 had additional causal factors: during these years, the rapid increase in the number of membership in the treaty and the sustained arms race between the US and SU during the Cold War have limited the practical discussion to take place in RevCon.⁵⁹ Thus, analyzing the failure of NPT RevCon in 2005 and 2015 in relation to the previous conferences of success in 2000 and 2010 provides a more precise account of the political confrontation between the NWS and NNWS on the issue of priority among the three pillars of NPT.

In contrast to the successful resolution of 13 steps from the 2000 NPT RevCon, the division among the different groups of parties were prominent in

⁵⁹ Iris Malone, "History of the Nuclear Non-Proliferation Treaty Review Conference," *Stanford University* (2016)

2005. On the issue of nuclear disarmament, the New Agenda Coalition (NAC), NAM, and additional NNWSs voiced for a more genuine commitment of the NWS as well as a more practical and noticeable implementation of the 13 steps. For instance, the submitted recommendations from the NAC⁶⁰ - which led the adoption of 13 steps in the previous conference –for properly implementing the disarmament within the NPT included the following: CTBT’s early entry into force, reduction of strategic and non-strategic nuclear weapons, maintenance of moratorium on nuclear testing, enhancement of irreversibility and transparency in all nuclear disarmament measures, development of efficient verification capabilities for arms reduction, and requiring “the nuclear-weapon states take further measures to de-alert and deactivate nuclear weapon systems, to remove nuclear warheads from delivery vehicles and to withdraw nuclear forces from active deployment pending the total elimination of these weapons.⁶¹” Similarly, few countries outside of the NAC and NAM such as Japan and Australia proposed the six-point of actions in their joint working paper which argued for further reduction of nuclear warheads and its operational status, diminution of the role of the nuclear arsenal, early entry into force of CTBT, and negotiation of FMCT.⁶²

⁶⁰ The countries part of the NAC in the 2005 NPT RevCon were New Zealand, Brazil, Egypt, Ireland, Mexico, South Africa, and Sweden.

⁶¹ Working paper on nuclear disarmament for Main Committee I: Recommendations submitted by New Zealand on behalf of Brazil, Egypt, Ireland, Mexico, South Africa and Sweden as members of the New Agenda Coalition (NPT/CONF.2005/WP27) from <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N05/333/11/PDF/N0533311.pdf?OpenElement>

⁶² Further measures to be taken to strengthen the Treaty on the Non-Proliferation of Nuclear Weapons regime (Main Committee I issues): Working paper submitted by Japan and Australia

While the demand for NWS' increased effort towards nuclear disarmament from other groups was in the form of progressive agenda setting, Malaysia's statement on behalf of the NAM was more direct and critical of the NWS' past behavior:

*“...The NPT is at crossroads, with its future uncertain. The historic compromise reached 37 years ago between NWS and NNWS over disarmament, proliferation, and peaceful uses of nuclear technology remains unfulfilled. Today as we meet, the stress is on proliferation, rather than disarmament in good faith. The lack of balance in the implementation of the NPT threatens to unravel the NPT regime, a critical component of the global disarmament framework... We must all call for an end to this madness and seek the elimination and ban on all forms of nuclear weapons and testings as well as the rejection of the doctrine on nuclear deterrence...The free, unimpeded and non-discriminatory transfer of nuclear technology for peaceful purposes must be fully ensured. Nothing in the Treaty should be interpreted as affecting this right.”*⁶³

The NWS have all positively agreed on the need for further disarmament in the nuclear arsenal, however, they failed to produce a joint paper. Despite the prevalent frustration of the NNWS on the disarmament issue, the US furthered the conflict by completely omitting the reference to the NWS' responsibility for disarmament and only emphasizing the need to implement stricter measures for non-proliferation in its submitted working paper.⁶⁴ Furthermore, the statement

(NPT/CONF.2005/WP34) from <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N05/341/25/PDF/N0534125.pdf?OpenElement>

⁶³ Statement by Syed Hamid Albar, Minister of Foreign Affairs of Malaysia, on behalf of NAM from <https://www.un.org/en/conf/npt/2005/statements/npt02malaysia.pdf>

⁶⁴ In its suggestion on the language for Main Committee report and RevCon Final Document, the US stated that “the Treaty’s principal beneficiaries are those member states that do not possess nuclear weapons” and strictly focused on the security risk from the noncompliance from the NNWS in the 23 provisions. “Strengthening the implementation of article I and II of the Treaty on the Non-Proliferation of Nuclear Weapons: Working paper submitted by the United States” (NPT/CONF.2005/WP.60) from [https://documents-dds-](https://documents-dds-ny.un.org/doc/UNDOC/GEN/N05/341/25/PDF/N0534125.pdf?OpenElement)

from the US delegation demonstrated the sharp contrast of perspective of the NWS on the issue of disarmament from the NNWS:

“The [NPT] is a key legal barrier against the spread of nuclear weapons and material related to the production of such weapons... Although the vast majority of member states have lived up to their NPT nonproliferation obligations that constitute the Treaty’s most important contribution to international peace and security, some have not... some continue to use the pretext of a peaceful nuclear program to pursue the goal of developing nuclear weapons... the United States fully supports peaceful nuclear development in many states... but the language of Article IV is explicit and unambiguous: states asserting their right to receive the benefits of peaceful nuclear development must be in compliance with their nonproliferation obligations under Articles I and II... No state in violation of Articles I or II should receive the benefits of Article IV.”⁶⁵

Given the fundamental gap in their perspective towards the principle and nature of the Treaty, the failure to agree upon the language, agenda, and the final document in 2005 NPT RevCon was a matter of corollaries. For its part, the US desired to adopt stricter measures against both the NNWS and non-state actors outside of the non-proliferation regime’s domain due to the devastating 9/11 terror in 2001; throughout the conference, the US problematized the covert proliferation network of A.Q. Khan, condemned the non-compliance of Iran and North Korea, and argued for the universalization of IAEA AP to enhance the export controls to prevent proliferation from nuclear technology transfers. The Bush administration’s withdrawal from the Anti-Ballistic Missile Treaty and signing of SORT with Russia have also indicated that the US had no intention of

[ny.un.org/doc/UNDOC/GEN/N05/358/44/PDF/N0535844.pdf?OpenElement](https://www.un.org/doc/UNDOC/GEN/N05/358/44/PDF/N0535844.pdf?OpenElement)

⁶⁵ Statement by Stephen G. Rademaker, US Assistant Secretary of State for Arms Control from <https://www.un.org/en/conf/npt/2005/statements/npt02usa.pdf>

ratifying the CTBT.⁶⁶

On the other hand, the NNWS who held prolonged frustration against the NWS' lukewarm efforts in nuclear disarmament, desired to formulate more practical and noticeable progress in the arms reduction, especially in reference to the previous conference's 13 steps; from their perspective, the logic introduced by the US – states are allowed the access to nuclear technology, only when they have fulfilled their obligations to the treaty – reflected the NWS' tacit priority of the NPT pillars where non-proliferation comes before disarmament and peaceful use of nuclear energy. Such belief that the NWS were merely regarding the treaty as a discriminatory tool to regulate the NNWS had caused the NAM and other NNWS to insist stronger on the Article IV 'inalienable right' and the issue also extended to the interpretation of the treaty's text. Therefore, the difference in priority of the principles of the NPT and the subsequent notion of technological discrimination served as the core of political conflict among the states parties, where the groups were divided into NWS and NNWS, as well as regional clusters based on the national and political interests.

Similar to the pattern of success in the 2000 NPT RevCon then the subsequent failure in 2005, the 2015 NPT RevCon failed to adopt the final document against the successful adoption of 64 action plans from 2010. The primary causes of the failure were similar to the ones from 2005, however, the

⁶⁶ John Simpson & Jenny Nielsen, "THE 2005 NPT REVIEW CONFERENCE," *The Nonproliferation Review*, Vol. 12, No. 2 (2005): 271-301

issue of unequal standards conjoined by the Middle East NWFZ debate was more or less the decisive factor in addition to the issue of priority among the NPT pillars. Prior to the 2015 RevCon, the NWS announced the joint statement in the London P5 Conference that “the P5 considered the implementation of the 2010 Action Plan (64 Action Plan) adopted by consensus as a roadmap for long term action.”⁶⁷ Despite the expectations for progress in nuclear disarmament, the P5 process only resulted in the consensus on the glossary of nuclear terminology. In the conference, the increasing pressure on the need for a significant reduction in the nuclear arsenal from the humanitarian initiative was noticeable from Austria’s Humanitarian statement on behalf of 156 countries, however, the conference once again failed to reach consensus on the agenda for nuclear disarmament due to “a reality gap, a credibility gap, a confidence gap and a moral gap”⁶⁸ between the NWS and NNWS. Also, the political division among the NWS, namely between the US and Russia from the political conflict from Russia’s annexation of Crimea,⁶⁹ furthered the complexity of the disarmament issue in 2015.

In regards to the regional division, the confrontation between the Arab group and the Western group reached a political stalemate on the issue of Middle East NWFZ. Of particular, the most direct collision occurred between Egypt and

⁶⁷ “Joint Statement from the Nuclear-Weapon States at the London P5 Conference” (2015/02/06) from <https://2009-2017.state.gov/r/pa/prs/ps/2015/02/237273.htm>

⁶⁸ “2015 NPT Review Conference Joint Closing Statement by Austria on behalf of 49 states” (2015/05/22) from <http://statements.unmeetings.org/media2/4658778/austria.pdf>

⁶⁹ William C. Potter, “The Unfulfilled Promise of the 2015 NPT Review Conference,” *Survival*, Vol. 58, No. 1 (2016):151-178

Iran against the US, UK, and Canada. Egyptian ambassador Hisham Badr gave the following statement for the Main Committee II where the frustration of the Arab group on the nonfulfillment of the 1995 resolution for the Middle East NWFZ is well reflected:

*“Among the major unfulfilled commitments undertaken under the Treaty and review conference – and there are many as was clearly demonstrated during the last few weeks – the objective of establishing a [Middle East NWFZ] has the most dismal record. It epitomizes the failure of the NPT to deliver on legal obligations... the 1995 Review and Extension Conference adopted without a vote the Resolution on the Middle East that called for the establishment of NWFZ in the region... despite the crucial importance of the 1995 resolution to the integrity and the sustainability of the Treaty, it remains unfulfilled... by the lack of sufficient political will by some of the depositaries of the 1995 Resolution”*⁷⁰

In contrast to the indirect reference towards Israel and the US, the submitted working papers on the issue from Iran, Egypt, and the NAM clarifies their target of criticism. For instance, in all of the working papers 19, 33, and 49 criticizes the potential threat imposed on the Middle East by the Israeli regime’s nuclearization and its ambiguous behavior and subsequent non-compliance to the agreed resolution from 2010 RevCon, as well as Israel not ratifying the NPT. In addition, the Arab groups expressed their dissatisfaction against the supposed-to convening states, namely Russia, UK, and the US, who have failed to do so in accordance with the 2010 resolution. Against the adamant posture from the Arab group, the three convening states responded with a rhetorical working paper on

⁷⁰ “Statement of the Arab Republic of Egypt by Ambassador Hisham Badr” (2015/05/04) from https://www.reachingcriticalwill.org/images/documents/Disarmament-fora/npt/revcon2015/statements/4May_Egypt_MCII.pdf

the issue, stating that they support the establishment of consultation to negotiate the establishment of the Middle East NWFZ rather than accepting the Arab group's proposal of specific structure and timeline on the issue. As the groups in conflict couldn't agree on the language and details of the final document, the 2015 RevCon once more failed to reach consensus. After the conference, the US Under Secretary for Arms Control and International Security Rose Gottemoeller delivered the concluding statement as follows:

“Unfortunately, the proposed language for a final document did not allow for consensus discussions among the countries of the Middle East for an agreement on the agenda and the modalities of the conference and set an arbitrary deadline for holding the conference. We attempted to work with other delegations... to improve the text; but a number of these states, and in particular Egypt, were not willing to let go of these unrealistic and unworkable conditions included in the draft text. In the end, the proposed final document outlined a process that would not build the foundation of trust necessary for holding a productive conference that could reflect the concerns of all regional states.”⁷¹

As demonstrated in the failure of the NPT RevCon in 2005 and 2015, one of the core issues within the NPT regime lies in the political and regional division among the parties. On the issue of priority between nuclear disarmament and peaceful use of nuclear energy, the parties were split between the NWS and NNWS, and on the issue of establishment of the Middle East NWFZ, the parties were divided into the Arab groups and Israeli allies. The efforts of the third parties such as the NAC and the supporting groups for the Humanitarian Initiative have

⁷¹ “Remarks at the Conclusion of the 2015 Nuclear Nonproliferation Treaty Review Conference by Rose Gottemoeller,” (2015/05/22) from <https://2009-2017.state.gov/t/us/2015/242778.htm>

been observed, however, it proved to be insufficient in drawing participation from other capable middle powers. For instance, several NATO allies remained silent on the issue of the priority conflict and South Korea did not participate in the Humanitarian Initiative. While their selective stance due to their security reliance on the US nuclear umbrella or secondary factors from diplomatic relations is understandable, the repeated failure in the NPT RevCon clearly suggests that the fault lines from the political and regional division of the parties are becoming more prominent, and the current by-stander-like stances of the third parties are only contributing in the deterioration of the regime. Given the US withdrawal from the 2015 JCPOA, continued nuclear weapons modernization of the NWS, and insignificant progress in the TPNW, the prospect for the upcoming NPT RevCon 2020 remains uncertain.

Geostrategic and Politicized Competition in Civil Nuclear Market: Race-to-Bottom?

The core instrument of “non-proliferation by denial” strategy has been the concept of export controls targeted at nuclear suppliers, in contrast to targeting the buyers to forego their attempts for nuclearization and adhere to the non-proliferation principles in return for transfers of technology for peaceful-use in “non-proliferation by persuasion.” Previously, the US held unchallenged leadership in the civil nuclear market with its dominant civil nuclear industry, less competition, and high technology barrier to acquiring various components for nuclear weapons. Nonetheless, recent developments of changing dynamics in

the market and emerging trends in the post-Fukushima era impose new challenges to the non-proliferation regime. This section provides a historic overview of the evolution of civil nuclear market, analysis on the key characteristics of the recent trend – that is, the growth of geostrategic and politicized competition among nuclear suppliers - and the consequent implications on the global landscape of nuclear non-proliferation.

Background of Civil Nuclear Market's Development

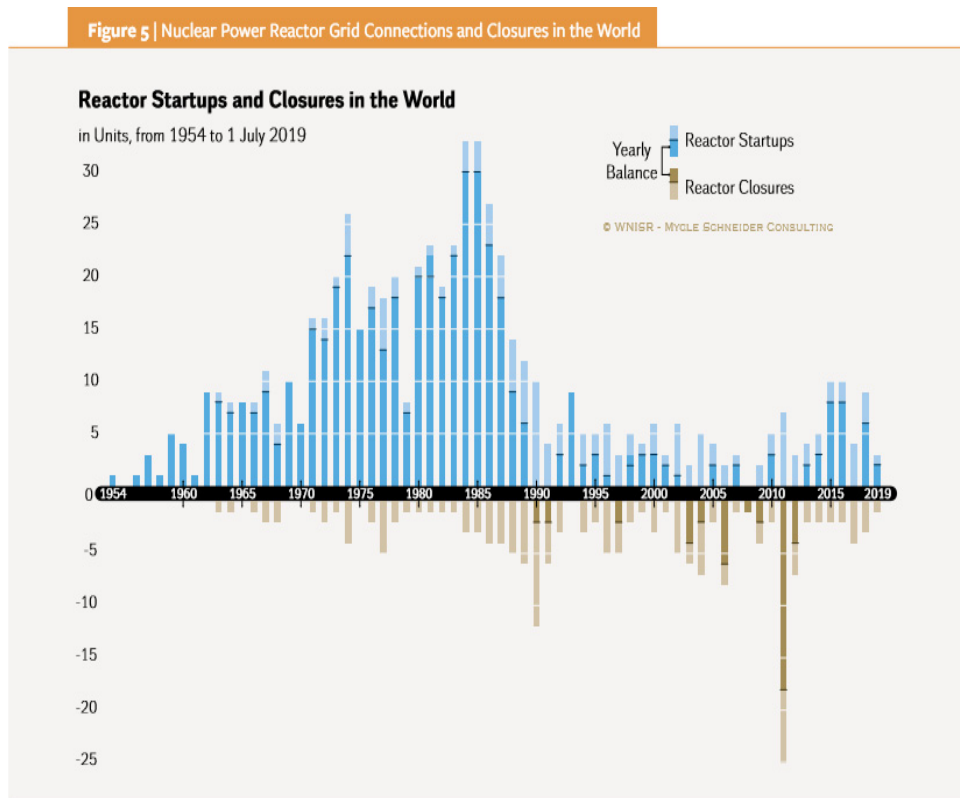


Figure 3. Source: World Nuclear Industry Status Report with IAEA PRIS (2019)⁷²

⁷² WNISR, with IAEA-PRIS (2019) from

Since the beginning of the nuclear industry in the post-WWII era, the global nuclear market has been predominated by Western vendors such as the US, SU, France, Canada, and the UK with their early advantage from developed technology, state support and investment, and enterprise models. After the rapid expansion in the 1960s and the 1970s, the industry reached its monumental peak in the number of reactor start-ups and under-construction stats in the 1980s; by 1989, the total number of 420 reactors were in operation where the two-thirds of them were located in North America and Europe. After the 1990s, major nuclear crisis such as the Three Miles Island and the Chernobyl accident killed the global enthusiasm and demand for nuclear power; inevitably, the Western vendors changed their strategies towards merely sustaining the business through updating the aged nuclear fleets and sub-licensing the designs to other companies, instead of launching new construction projects.

Yet, with the beginning of the 21st century, the prices of fossil fuels begun to rise again in accordance with the emerging economic expansion from China, Brazil, India, and Russia: in particular, the full or semi-regulated electricity markets in Asia boosted their construction for nuclear power while the new demand from Western states remained low. From 2001 to 2010, the newly built reactors from China, Japan, South Korea, and India accounted for 80% (25 out of 32) of the new grid connection, marking the beginning of ‘nuclear renaissance’ as many scholars and experts have believed. Until the Fukushima incident in

<https://www.worldnuclearreport.org/-World-Nuclear-Industry-Status-Report-2019-.>

2010, there has been a significant increase in newcomers, many of whom were from Asia that indicated a strong interest in nuclear power development, and the market dynamics for demand began to change.

Although the Fukushima incident did have a negative impact⁷³ on the global demand, the nuclear energy industry did not collapse dramatically; rather, the tenable statistics from credible organizations, institutions, private company reports such as IAEA, International Energy Agency (IEA), and World Nuclear Association (WNA) suggests a steady growth. The evidence of their projection is as follows: for the sixth consecutive year, the global electricity generation from nuclear reactors has increased to 2563 Twh in 2018, up from 2502 Twh in 2017; regionally, there has been an increase in nuclear generation worldwide (Asia, East Europe, and Russia, North and South America, West and Central Europe) with exception to Africa where only two nuclear reactors operate in South Africa; In terms of number of operating nuclear reactors, there were 449 in 2018 – up from 448 in 2017 – where the pressurized water reactors (PWRs) accounted for 60% of the type of reactors; the global share of nuclear power in electricity generation has been steady around 10-11%, and according to WNA, the industrial revenue is expected to grow 2.8% annually in the upcoming 20 years, primarily from the

⁷³ Several states such as Taiwan, Spain and Switzerland reconsidered or paused their nuclear power programs, while some states such as Germany, immediately accelerated its nuclear-phase out plans. Most notably, Japan's 54 nuclear reactors were shut down after the disaster and it is still in the recovery phase due to the negative public opinion and debates thereof. With the decline of demand in nuclear power, big-name Western vendors such as Westinghouse and AREVA undertook the process of bankruptcy and financial restructuring of the enterprise.

newcomers or developing nations instead of developed nuclear nations.

Market Trend 1: Changing Dynamics of “Supply”

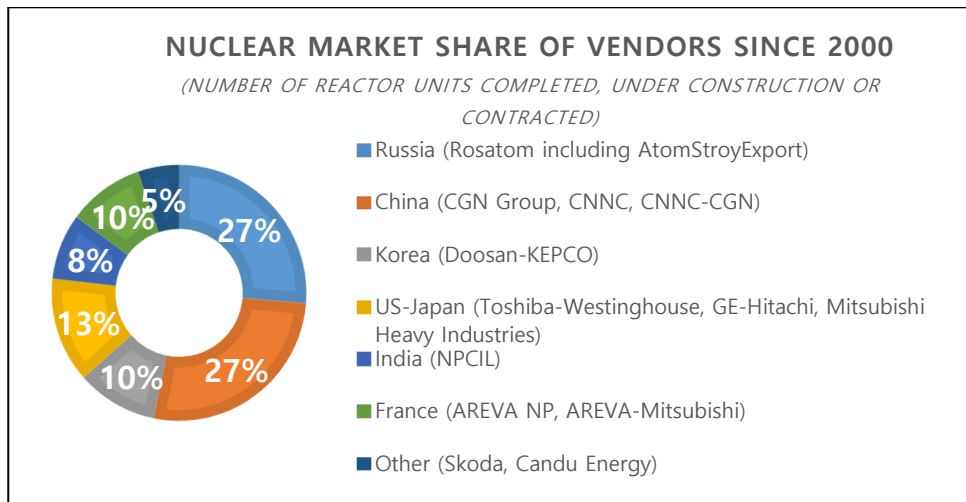


Figure 4. Chart remade by the author. Source: World Nuclear Industry Status Report 2016⁷⁴

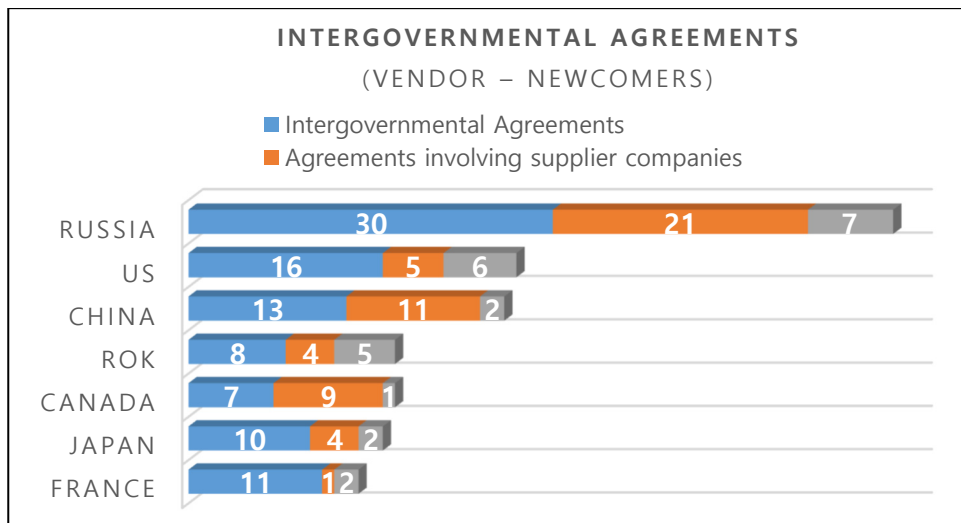


Figure 5. Chart remade by author. Source: ESI-CIL Nuclear Governance Project 2018⁷⁵

⁷⁴ <https://www.worldnuclearreport.org/IMG/pdf/20160713msc-wnistr2016v2-lr.pdf>

⁷⁵ https://esi.nus.edu.sg/docs/default-source/doc/evolving-nuclear-landscape_website-publication.pdf?sfvrsn=2

One of the most prominent aspects of the recent market trend is the change in the dynamics of nuclear suppliers; that is, the rise of Chinese and Russian state-owned-enterprises (SOE) and the decline of the previously dominant Western vendors among reactor supplies. In spite of lacking experience compared to the Western counterparts of the US, Japan, and France, the performance of the emerging vendors is typically significant in the past two decades of civil nuclear market history. As seen in Figure 4, the combined market shares of the emerging vendors of Russia, China, and South Korea account for more than 50%, while the total sum of the Western vendors represents less than 30%. More importantly, the recent dominance of the emerging vendors is further evidenced by the amount of intergovernmental agreements with the newcomers; most of the nuclear vendors hold monopoly in their domestic expansions (Russia 100%, Korea 100%, China 60% domestic and 40% imports, US-Japan 100% when counting the Toshiba-Westinghouse and GE-Hitachi as domestic for both US and Japan), and both Russia and China have additional constructions planned.⁷⁶ This contrasts with the domestic plans for other nuclear vendors such as France (planning reduction of nuclear energy dependency in their national energy portfolio in accordance with the energy conversion plan), South Korea (not in all-out nuclear phase-out but aims to reduce the nuclear dependency under the new energy conversion plan), and the US (mixed results of continuing uprates and early retirements, while no

⁷⁶ Brent Dixon & Leilani Beard, “Global Nuclear Markets – Market Arrangements and Service Agreements” (2016), Idaho National Laboratory (US Department of Energy)

plans for new constructions have been made).⁷⁷

Behind the recent rise of Chinese and Russian vendors, the strong state support in terms of financing and expansion plans have been the key impetus. These SOEs' commercial objectives are often subsumed by the state's national policy goals where the government's efforts in cultivating enhanced political relationships with other states benefit them by subsequent economic partnerships. For instance, the Director-General of Rosatom is under supervision of Russian President and Security Council (Ministry of Atomic Power, Natural Resources, Defense, Industry and Trade, and Energy) and the Supervisory Board is composed of senior government officials; the key decisions of China's civil nuclear operations are made by the leadership of the Chinese Communist Party (CCP). As NWS, maintaining the strong linkage between their military and civilian nuclear sectors is one of the most important strategic priority for China and Russia, and the close ties between these vendor companies and the states produce synergies in increasing the chances for foreign exports; with committed state support, both Chinese and Russian firms could pursue deals with more generous financing terms than their competitors and thereby secures competitive advantage in the nuclear market.

⁷⁷ Ibid.

Market Trend 2: Shifting Regional Concentration of Newcomers

Level of Progress	Countries
Power Reactors Under Construction	UAE, Belarus
Contracts signed, legal and regulatory infrastructure well-developed or developing	Lithuania, Turkey, Bangladesh, Vietnam
Committed Plans, legal and regulatory infrastructure developing	Jordan, Poland, Egypt
Well-developed plans but commitment pending or stalled	Thailand, Indonesia, Kazakhstan, Saudi Arabia, Chile, Italy (stalled)
Developing Plans	Israel, Nigeria, Kenya, Laos, Malaysia, Morocco
Discussion as serious policy option	Namibia, Mongolia, Philippines, Singapore, Albania, Serbia, Croatia, Estonia, Latvia, Libya, Algeria, Kuwait, Azerbaijan, Sri Lanka, Tunisia, Syria, Qatar
Interested, yet not a policy option officially	Australia, New Zealand, Portugal, Norway, Ireland, Kuwait, Cuba, Paraguay, Myanmar, Cambodia, Tanzanian

Figure 6. Nuclear New-Comers in Different Stages. Source: Idaho National Laboratory, 2016⁷⁸

The second point of the recent civil nuclear market trend is the regional shift in the demand and emergence of nuclear newcomers. While the demand from traditional customers in the West has declined due to phase-outs or energy conversion plans, there has been emergence of newcomers for the first time in almost three decades who are in various stages of progress; According to the World Nuclear Association and World Nuclear Industry Status Report 2019, “there are 30 countries in which nuclear energy is being considered, planned, or being built for the first time, with an additional 20 countries that have “at some time” expressed an interest in developing nuclear power.” (WNISR 2019, 175) It should be highlighted that these demands of newcomers are mostly concentrated

⁷⁸ Ibid.

in non-traditional regions such as Eastern Europe, Middle East, Southeast Asia, and Africa as seen in Figure 6. The plans currently under construction are narrowed down to UAE⁷⁹, Belarus, Turkey, and Bangladesh, and it is unclear how or when the future plans for other countries would be carried out further; yet, the researched data suggests that Russia has the strongest foothold in contracting with newcomers so far. The implications of this shift in regional concentration will be discussed in the following paragraph.

Table 16 | Summary of Potential Nuclear Newcomer Countries

Country	Reactor/Site	Proposed Vendor	Proposed/Actual Construction Start	Initial Planned Startup Date	Current Planned Startup Date
Under Construction					
Bangladesh	Rooppur	Rosatom	November 2017	11/ 2017 7/2018	2023 2024
Belarus	Ostrovets / Belarusian	Rosatom	2013	2016	Q4 2019
			2014	2018	7/2020
Turkey	Akkuyu	Rosatom	2018	2015	2024
UAE	Barakah-1	KEPCO	2012	2017	2020
	Barakah-2		2013	2018	2021
	Barakah-3		2014	2019	2022
	Barakah-4		2015	2020	2023
Contract Signed or Advanced Development					
Lithuania	Visegrade	Hitachi	Suspended	-	-
Poland		?	?	-	-
Vietnam	Ninh Thuan	Rosatom	Suspended	-	-
“Committed Plans”					
Egypt		Rosatom	2018	-	-
Jordan		Rosatom	Abandoned	-	-
Turkey	Sinop	Mitsubishi/Areva	Abandoned	-	-
	Ingeada	SNPTC/WH	2019	-	-
“Well Developed Plans”					
Indonesia		Rosatom	Indefinitely Postponed	-	-
Kazakhstan		Rosatom	?	-	-
Saudi Arabia		?	?	-	-
Thailand		?	?	-	-
Uzbekistan		Rosatom	?	-	-

Figure 7. Source: WNISPR 2019

⁷⁹ As of February 2020, the construction of Barakah I is completed and the UAE’s Federal Authority for Nuclear Regulation has approved for the operation license. The commercial operation has not begun yet. Turak, N. (2020, February 19). “The UAE gets green light to operate the Arab world’s first nuclear power plant”. *Consumer News and Business Channel (CNBC)*.

Market Trend 3: “One-Stop-Shop” and Tendency to Unitize the Supply Chains

The last characteristic of the emerging trend is the tendency of unitizing the supply chain in the ‘one-stop-shop’ strategies of the Russian and Chinese vendors. In addition to the aforementioned comparative advantage of the SOEs with generous financial offers, these vendors also outcompete its rivals with vertical-integration structure that allows the buyer to simply deal with ‘total-package’ offers instead of the competitive bidding process in split contracts; typically, “these packages are a departure from the traditional nuclear power program model requiring a new build country to have the human and technical infrastructure and competency necessary to indigenously operate the plant at the onset.”(Drupaday, 15)⁸⁰ These one-stop-shop strategies by the SOEs strengthen the political ties with the buyer country as these partnerships typically take form of an intergovernmental agreement, and it marginalizes the other competing vendors’ opportunity to partially participate in the construction as these agreements usually secure the SOE to be the only nuclear supplier in long-term.

In the case of Russia, as seen in Rosatom’s build-own-operate (BOO) projects, the merits of generous financing terms assured by the state and full fuel cycle services have placed their status as one of the most successful and favorable options typically for the newcomers who are generally short-on-cash or electricity-poor. Although whether Russia could operate the BOO projects as it

⁸⁰ Ira Drupaday, “Emerging nuclear vendors in the newcomer export market: strategic considerations,” *The Journal of World Energy Law & Business*, Vol. 12, No. 1 (2019): 4-20

claims or not remains questionable, the strategic value behind such approach should not be undermined. While China's rapidly increasing market share has been largely due to its domestic construction, its ambitious expansion plans in accordance with One-Belt-One-Road (OBOR) initiative hint the pursuit of foreign contracts is one of the highest priority objectives on their political agenda; apart from the similar one-stop-shop strategy as Russia, China's additional selling point is being cost-effective, the economies of scale from its mature domestic market, and a large skilled labor force. Although it lacks the experience for foreign construction, the fast-growing nuclear industry at home could offset the concerns from the buyer's perspective. This flexible capacity to arrange wide variety of options, originating from the strong state support and the advanced technology, has promoted synergy with the increasing newcomers in the civil nuclear market whose pattern generally would start with the interest in investment for small modular reactors (SMRs), then gradually expand their nuclear capacity to large-scale reactors in the future.

Implications: Race to Bottom?

The recent change in the dynamics of the civil nuclear market landscape has arisen various voices of concerns in regards to its potential impact on the nonproliferation regime and global nuclear order. When looking at the nature and logic of civil nuclear market under the regime and consequent norms built upon the principle of "non-proliferation by denial," the effect of technology regulations in the market is the strongest and most stable under unipolarity; otherwise, the

great powers need to be aligned in their view towards the global nonproliferation agenda and thereby cooperatively sustaining the ‘denial’ in harmony under bipolar or multipolar system. Simply put, as the level of competition among nuclear suppliers increases, the potential of proliferation also increases as the buyers can pit the suppliers to work against each other for its benefit under the current transition towards multipolarity in the civil nuclear landscape. While none of the NSG members have newly exported ENR technologies to other states, the recent development of the market trend arose concerns for “race-to-bottom” where the priority of the suppliers shifts from maintaining highest non-proliferation standards to concluding sales for their national benefits even at the cost of increased risks for proliferation.

The concerns for the potentially weakened regime from the recent change in the civil nuclear market could be broken down into four points. The first issue lies within the ambiguous non-proliferation commitment of Russia and China based on their past records. Although the US is not free of criticisms in terms of rule bending⁸¹, both Russia and China have been criticized for taking advantage of loopholes in the NSG guidelines best known as the ‘grandfather clause’ and exceptional cases of exports without comprehensive safeguards when such transfer is “deemed essential for the safe operation of existing facilities.” Moreover, the highly centralized authoritarian political structure of both

⁸¹ The signing of 123 Agreement with India in 2005 in spite of it not being a member of NPT; the US specifically amended the domestic law (AEA 1954) and India was subsequently given India-specific safeguards agreements with IAEA in 2009, and NSG waiver which arose a strong controversy and criticisms for the double standard.

countries makes their nuclear policy opaque and inconsistent which decreases predictability and transparency for the non-proliferation commitment from the international community's perspective. Second, the concerns for increased proliferation risks originating from the weak state capacity and security vulnerability of the newcomers in comparison to the traditional West are amplified. In their study, Yim and Viet exactly touched on this issue based on the Worldwide Governance Indicators from World Bank; the results of 25 prospective importers⁸² -which were located in Asia, Middle East, Africa, and Northern and Eastern Europe- political stability, government effectiveness, regulatory quality, and control of corruption were significantly lower than that of the major exporter countries such as US, France, Russia, South Korea, Canada, and Japan. The regional instability and conflict-prone characteristic not only increases the proliferation risk for other states, but also the potential hazard imposed from non-state actors which could take advantage of weak physical security measures. The third is the growing geostrategic and political competition among the nuclear suppliers which results in weakened organizational strength of NSG. Under the current international system, the only legally-binding instrument for non-proliferation export controls is UNSCR 1540 and the non-legally binding NSG guidelines are applied voluntarily from the suppliers. The perspective disparity among the suppliers was already noticeable when they couldn't reach consensus on membership such as the cases of India and Pakistan,

⁸² The 25 prospective countries were Algeria, Argentina, Bangladesh, Belarus, Bulgaria, China, Czech, Egypt, Finland, Hungary, India, Iran, Jordan, Malaysia, Nigeria, Pakistan, Romania, Saudi Arabia, Slovakia, South Africa, Thailand, Turkey, UAE, UK, and Vietnam (7)

and the recent politics-based competition could potentially threaten the lowering export standards for each suppliers' national interest. Lastly, the continuance of Russia and China's dominance in the civil nuclear market could potentially lead to the creation of new export norms where the minimum guidelines of NSG become the regular standards in nuclear trades. In the 2015 NPT Review Conference, only the US and South Korea have suggested the application of AP as the universal requirement for nuclear exports while the other states highlighted the importance of non-discrimination in having access to the peaceful use of nuclear energy. The disharmonized stance among the nuclear suppliers on deciding what 'the appropriate export control is' is one thing, but the fact that it affects the newcomers' choices for their contract is another; should the recent trend of more politicized and geostrategic competition for nuclear export continue in the future, the proliferation risk at a global scale would inevitably increase in reference to the deteriorating effectiveness of the regime's nuclear export control arrangements.

Overall, both sets of critical issues within the non-proliferation regime impose a security challenge for the international community and the fundamental cause is the political and regional division among the participants against the established norm rather than the power vacuum to oversee the issues. In other words, the nature of the conflict on the issue of priority of the three pillars and the geo-politicized export competition is more associated with 'how' to bring the states of different national interests together on the established guidelines, rather than producing a new set of international instrument on consensus. As was the

case in the repetitive pattern of failure and success in the NPT RevCon and the recent race-to-bottom like competition trend of the civil nuclear market, the gap among the states in conflict is only getting wider due to the increase in complex political, economic, and security factors. In this regard, the competent middle powers' role in taking the bold initiative and bridging the parties in conflict to take practical progress towards the established value and norm of the international regime is imperative, as it holds the potential to resolve the aforementioned political stalemates. One of the unique strengths of the middle powers is that they secure the moral high ground against the states in conflict which originates from their compliance to the established international norms; thus, in the vein of non-proliferation regime, it is more likely to be effective when the norm abiding middle powers appeal on the fulfillment of the NPT principles and agreed resolutions for the common objective of nuclear safety, compared to the NWS or NPT non-signatories. When more competent middle powers participate in such mediating initiatives for achieving the common objective, the current deterioration of the regime could be reversed through the strengthened non-proliferation institution, norms, and eventually culture. In this context, the role and responsibility of middle power against the recent transition of the regime is more prominent than ever, and their collective actions on the basis of the global security rather than individual national interest is an urgent imperative.

CHAPTER IV

An Analysis on South Korea as a Middle Power in the International Non-Proliferation Regime

This section analyzes South Korea's status as a middle power in the international non-proliferation regime through the application of role-theory framework as seen in Figure 1. The middle-powermanship of South Korea is analyzed on the three typical roles of middle powers, as a good international citizen, as a supporter of multilateralism, and as a supporter of global nuclear order and its values, based on its diplomatic records and contributions within the non-proliferation regime. The primary aim of this analysis is to understand and clarify 1) the meaning of middle power in the international non-proliferation regime, hereinafter referred as *nuclear middle power* or *nuclear middle-powermanship* for convenience, 2) the verification of South Korea's status as nuclear middle power and assessment of its performance as a nuclear middle power, and 3) the limitations and challenges of South Korea's nuclear middle powermanship in reference to its past and current nuclear policies.

4.1 South Korea as a Good International Citizen

The role of a good international citizen is constituted by indicators such as peacekeeper, functional leader, and institution builder on the tertiary level which comprehensively highlights the cooperative efforts of a state. In application of the framework on the international nuclear non-proliferation regime, the notion

of good international citizenship could be assessed based on the state's record of commitment towards non-proliferation, arrangements for cooperation and promotion of peaceful use of nuclear energy, and degree of contribution within the IAEA activities. In this section, South Korea's previous records of commitment for non-proliferation and various cooperative contributions for the promotion of peaceful use of nuclear energy are examined to verify its role as a good international citizen within the regime.

Contribution for Cooperation and Promotion of Peaceful Use of Nuclear Energy

In the 54th General Conference of IAEA 2009, South Korea declared its change of status from a recipient to donor in IAEA's technical cooperation program (TCP) in which the IAEA's comprehensive support through capacity building, cost-sharing, and network building to member states are provided. Joining the IAEA since its establishment in 1957, South Korea's international status based on the development of nuclear power program arose rapidly as reflected by its change in relationship with the IAEA from a recipient in the 1960s, partner in 1990s, and a net-donor in the 2010s. There are 171 member states in IAEA as of 2019, and South Korea was the 13th highest cost sharing country in IAEA's annual budget according to the latest publication of South Korea's Ministry of Foreign Affairs (MOFA).⁸³ While South Korea's active participation for promotion of peaceful use of nuclear energy is also observed in other international instruments such as

⁸³ The list of countries with higher costs (in order): US, Japan, China, Germany, France, UK, Italy, Brazil, Russia, Canada, Spain, Australia. The ranking accounts for the total sum of regular budget, TCP fund, and extra-budgetary resources including the Nuclear Security Fund (NSF). Ministry of Foreign Affairs, *2018 IAEA Outlook*, (2018)

the Nuclear Energy Agency of the Organization for Economic Cooperation and Development (OECD/NEA), Generation IV Forum (GIF), the International Framework for Nuclear Energy Cooperation (IFNEC), and International Commission on Radiological Protection (ICRP), the most proactive and acknowledged areas of South Korea's cooperation are the research and development (R&D) of nuclear technology and nuclear safety.

South Korea's ambition to become one of the leading states in the field of R&D of nuclear technology and enhance its status as a developed civil nuclear state has been acknowledged by the international community on several fronts.

First, the affiliate of Korea Atomic Energy Research Institute (KAERI), Advanced Radiation Technology Institute (ARTI) since 2012, and the Korea Institute of Nuclear Safety (KINS) since 2011 have been designated consecutively as the IAEA collaborating center; currently, there exists a total of 25 collaborating centers from 20 countries,⁸⁴ specialized in 8 topics of environment, food & agriculture, human health, water resources, radioisotope production and radiation technology, nuclear science, nuclear security, and nuclear energy. The designation of the IAEA collaborating center requires the applying institution to be physically located in the IAEA member state, have a minimum two years of experience in collaboration with the IAEA, and the demonstration of the applying institution's government's compliance to the

⁸⁴ Ministry of Science and ICT, *2018 Nuclear Energy White Paper*, (2018)

IAEA's nuclear safety and security guidelines.⁸⁵ As an advanced nuclear technology state, South Korea has been participating in education and training programs for developing countries' students and scientists on radiation technology, nuclear policy planning, implementation, and management.

Second, South Korea concluded NCAs for R&D of specific nuclear technologies and overseas promotion of peaceful use of nuclear energy with 29 states, of which includes the most advanced nuclear states such as US, France, China, and Russia, to nuclear newcomers such as Saudi Arabia, UAE, and Jordan⁸⁶. In addition, South Korea holds joint standing committees with the US, France, Russia, China, India, and Saudi Arabia on an annual and biannual basis. The total number of NCAs concluded on the absolute scale holds limitations in evaluating the state's status in the international nuclear order; however, on a relative scale, South Korea ranks 4th in the total number of NCAs, following US, Russia, and France, which implies its technological advancement on the global scale and provides important evidence for understanding South Korea's efforts in cooperation for nuclear technology and safety.

Third, South Korea's Advanced Power Reactor 1400 (APR 1400) received the US Nuclear Regulatory Commission's (NRC) standard design approval in 2019. Although the US NRC's certification means that APR 1400 had satisfied the US safety requirements and South Korea would be able to save cost

⁸⁵ IAEA, *IAEA Collaborating Centers Scheme Reference Guide*, (2016)

⁸⁶ Ministry of Science and ICT, *2018 Nuclear Energy White Paper*, (2018)

and time should it enter the US market for reactor bids in future, it is very unlikely that South Korea applied to NRC for safety certificate with such purpose in 2014. The greatest significance of NRC's safety approval on APR 1400 is that given the advancement of the US and its leadership status in the international nuclear order, the NRC certificate serves as the de facto quality assurance indicator in the global nuclear industry⁸⁷; the APR 1400 was first and so far the only non-American nuclear reactor to receive the safety approval from NRC, as the evaluation of French-owned AREVA's Evolutionary Power Reactor (EPR) got suspended in 2017, and that of the Japanese-owned Mitsubishi Heavy Industry's Advanced Pressurized-Water Reactor (APWR) has been ongoing for 13 years without much progress.⁸⁸ While conclusion of nuclear reactor export is not always based on the competency or advancement of technology, as it often involves multi-dimensional factors such as intergovernmental relationship, financing options, and political merits, the NRC certificate well-reflects South Korea's competency in nuclear reactor design and commitment for nuclear safety.

One may simply consider the primary motivation for South Korea's endeavors to advance the nuclear technology and thereby enhancing the national competency as a nuclear supplier solely lies with its pursuit of economic interests; however, from the perspective of promoting the peaceful use of nuclear energy,

⁸⁷ Korean reactor design certified for use in USA. (2019, August 27). *World Nuclear News*. Retrieved from <https://www.world-nuclear-news.org/Articles/Korean-reactor-design-certified-for-use-in-USA>

⁸⁸ US Nuclear Regulatory Commission, *Design Certification Application for New Reactors*, (2020) <https://www.nrc.gov/reactors/new-reactors/design-cert.html>

such efforts and investments ultimately contribute in the facilitation of safer environment and expanded country users for nuclear power, which upholds the primary purpose of IAEA. Drawing upon the financial, technological, and cooperation standards, South Korea's contribution in promoting the peaceful use of nuclear energy and subsequent acknowledgement from the international community provides a sufficient condition to consider it as a nuclear middle power in the context of practicing good international citizenship.

Records of Commitment for Nuclear Non-Proliferation

Another important index for determining a state's good international citizenship within the non-proliferation regime is the state's overall commitment for nuclear non-proliferation. In review of South Korea's previous records of commitment for the non-proliferation from the 1960s to present, it could be concluded that it holds a mixed record, based on the key historical events and consequent reaction of international community.

South Korea's first-ever nuclear program begun in 1962, with the operation of small research reactor Training, Research, Isotopes, General Atomics (TRIGA) Mark II from the American corporation General Atomics; the first-ever commercial nuclear reactor, however, was the Kori I PWR supplied and constructed by Westinghouse in 1978. With Kori I, South Korea became 21st state to generate electricity with nuclear power in history. Nonetheless, in the later years of the 1970s under Park Chung-Hee's military dictatorship, South Korea's attempt for nuclearization has been observed; the primary motivations were for the security concerns where interlinked factors such as the receding security

guarantee from the US under Nixon Doctrine in 1969⁸⁹ and discussions for withdrawal of the US forces in South Korea under Jimmy Carter.⁹⁰ According to the report of the Central Intelligence Agency (CIA), “President Park reportedly authorized the nuclear weapons design element of 890 (nuclear weapons program...combining missile design work with nuclear and chemical warhead research) in December 1974.” (CIA report, 6)⁹¹ While South Korea reached out to Canada for pressurized heavy-water reactor and France for the reprocessing technology to obtain plutonium, the increasing pressure of US to suspend South Korea’s nuclear ambitions brought about the cancellation of negotiation between South Korea and France, as well as South Korea’s signing of NPT in 1975.⁹² In 2004, South Korea admitted to four additional covert nuclear activities prior to ratification of IAEA AP: the activities included in the disclosure were “chemical uranium enrichment from 1979 to 1981, [separation of] small quantities of plutonium in 1982, [experimental] uranium enrichment in 2000, and [manufacture of] depleted uranium munitions from 1983 to 1987,”⁹³ which

⁸⁹ Eliza Gheorghe, “Proliferation and the Logic of the Nuclear Market,” *International Security*, Vol. 43 No. 4 (2019): 88–127

⁹⁰ Peter Hayes, “Park Chung Hee, the Cia & the Bomb,” *Global Asia* Vol.6, No.3 (2011)

⁹¹ US Central Intelligence Agency National Foreign Assessment Center, “South Korea: Nuclear Developments and Strategic Decision making,” June 1978, declassified for release, October 2005 from:
http://nautilus.org/wp-content/uploads/2011/09/CIA_ROK_Nuclear_DecisionMaking.pdf

⁹² E.Gheorghe, 114-116

⁹³ Jungmin Kang et al, “South Korea’s Nuclear Surprise,” *Bulletin of the Atomic Scientists*, Vol. 61, No. 1 (2005): 40–49

marked the loopholes and insufficiency of IAEA safeguard measures. Against this issue, the IAEA Board of Governors did not forward it to UNSC, as the amount of involved nuclear materials was insignificant and there were no signs of additional unreported-experiments, as well as taking South Korea's active cooperation with the IAEA inspection into consideration.⁹⁴

In more recent times, voices arguing for South Korea's nuclearization against North Korean nuclear threat still exist albeit it has not been the mainstream opinion in the domestic political arena. For instance, in 2013, South Korean conservative party (Saenuri Party) member Won Yoo-Chul argued for South Korea's need to consider conditional armament of tactical nuclear weapon⁹⁵, and in 2017, some members of Liberty Korea Party (LKP) voiced for installation of American tactical nuclear weapon against North Korea's nuclear threat; LKP Chairman Hong Joon-Pyo stated that if the adoption of American tactical nuke is not a viable option, South Korea would need to find alternative ways to protect the country, implying domestic nuclearization as one possible option⁹⁶ on his visit to US⁹⁷. Quotes from the official figures such as the

⁹⁴ IAEA Board Concludes Consideration of Safeguards in South Korea (2004, November 26).

⁹⁵ Dalton, T., Byun, S.-G., & Lee, S.-T. (2016, April 27). "South Korea Debates Nuclear Options," *Carnegie Endowment for International Peace*. Retrieved from <https://carnegieendowment.org/2016/04/27/south-korea-debates-nuclear-options-pub-63455>

⁹⁶ Choi, H.-Y. (2017, September 8). "60% back S. Korea's nuclear armament," *KoreaTimes*. Retrieved from https://www.koreatimes.co.kr/www/nation/2017/09/205_236196.html

⁹⁷ Field, A., Shelly, J., & Griffiths, J. (2017, October 19). "South Korean opposition leader: Nukes are the only way to guarantee peace," *Cable News Networks (CNN)*. Retrieved from <https://edition.cnn.com/2017/10/18/asia/south-korea-trump-nukes/index.html>

lawmakers and retired military generals are often referenced by foreign media in their coverage of South Korea's unextinguished ambition for nuclearization, as well as the survey result of South Korean public opinion on North Korea's 3rd nuclear test where 64% supported South Korea's nuclearization.⁹⁸ In the 2017 survey on the same issue, the percentage of proponents for South Korea's nuclearization was 60%. Although it is absurd to consider that South Korea is genuinely determined in seeking pathways for nuclearization, foreign media tend to take the issue more seriously.⁹⁹ The presence of voices of pro-nuclearization in South Korea in combination with the above reviewed historic incidents serves as a deteriorating factor for South Korea's status as a strongly committed non-proliferation state.

On the contrary, there also exists cases that demonstrate South Korea's determination for improving the global environment for nuclear non-proliferation. One of the most significant milestones for South Korea was hosting the 2nd Nuclear Security Summit (NSS) in 2012 which involved the leadership of 53 states and 4 international organizations of the UN, IAEA, European Union (EU), and International Criminal Police Organization (INTERPOL). Although the 2012 NSS was initially intended to concentrate on the issues of nuclear materials

⁹⁸ Gallup, "Public Opinion on North Korea's 3rd Nuclear Test and Inter-Korean Relations," (2013) <http://www.gallup.co.kr/gallupdb/reportContent.asp?seqNo=392#>

⁹⁹ Lee, M. Y. H. (2017, September 13). "More than ever, South Koreans want their own nuclear weapons," *The Washington Post*, Retrieved from <https://www.washingtonpost.com/news/worldviews/wp/2017/09/13/most-south-koreans-dont-think-the-north-will-start-a-war-but-they-still-want-their-own-nuclear-weapons/>.

security, South Korea added nuclear safety on the agenda in light of the Fukushima accident in 2011. There has been a difference in vision towards the agenda-setting and future of the summit process between South Korea and the previous chair, the US¹⁰⁰, however, the Seoul Communique of 2012 identified 11 key priorities of important nuclear subjects in the end.¹⁰¹ Along with the US, Belgium, and France, South Korea declared cooperation to develop high-density low enriched uranium (LEU) which would substitute the use of HEU in civil reactors that holds the potential for nuclear weapon production. In the subsequent 2014 NSS in Hague, South Korea, Netherlands, and the US submitted a key gift basket – voluntary national commitments in addition to communique in the summit - of strengthening nuclear security implementation which won the support of 32 out of 53 participants.

South Korea's enhanced participation in the global nuclear security and safety initiatives was observed typically under the Lee Myung-Bak administration, when it joined the Proliferation Security Initiative (PSI) in 2009 and began to take a more active role in the Global Initiative to Combat Nuclear

¹⁰⁰ In the 2012 NSS, South Korea's more ambitious stance towards global nuclear security such as combating nuclear terrorism and minimizing the HEU, collided with more conservative stance of the US which was worried for strong resistance from Russia and Pakistan. Miles A. Pomper, "The Seoul Nuclear Security Summit: How Much of a Success?", *Korea Economic Institute*, (2012)

¹⁰¹ The 11 important areas are: global nuclear security architecture, role of the IAEA, nuclear materials, radioactive sources, nuclear security and safety, transportation security, combating illicit trafficking, nuclear forensics, nuclear security culture, information security, and international cooperation. "Seoul Communique" (2012) from <https://2009-2017.state.gov/documents/organization/236996.pdf>

Terrorism (GICNT). There exists a view that South Korea's change in position towards global initiative is primarily due to North Korea's nuclear tests and subsequently increased domestic security threats rather than its determination to contribute in the global agenda, and therefore, the context should be understood as local instead of global¹⁰²; however, notwithstanding the causes, the increased footprints of South Korea were evident in the global stage, as it hosted the 7th GICNT plenary meeting in 2011, endorsed as the implementation and assessment group (IAG)'s coordinator, hosted GICNT's advanced emergency response workshops in 2019, and participated in the PSI maritime drills and Asia-Pacific Workshops.

Overall, South Korea's assumption of a good international citizen role within the non-proliferation regime was most recognized in its technological and cooperative contribution to the peaceful use of civil nuclear energy. While South Korea's participation in the global initiatives and summits such as the NSS, GICNT, PSI gained positive recognition from other states, the fact that the nature of participations is more reactive than active, and the mixed records for non-proliferation commitment since the 1960s serve as negative points. Nonetheless, in consideration to more recent technological cooperation with the nuclear newcomers and its previous efforts for global nuclear safety, South Korea qualifies as a good international citizen within the non-proliferation regime

¹⁰² Scott Bruce, "Counterproliferation and South Korea: From Local to Global," Council on Foreign Relations, (2012) from https://www.cfr.org/content/publications/attachments/GlobalKorea_report_Bruce.pdf

which is one of the necessary conditions for the establishment of middle power status.

4.2 South Korea as a Supporter of Multilateralism

In Robert Keohane's words, multilateralism is defined as "the practice of coordinating national policies in groups of three or more states, through ad hoc arrangements or by means of institutions."¹⁰³ The role as a supporter of multilateralism is best illustrated by the state's performance as coalition builder, and/or as a catalyst, facilitator, and manager of multilateral cooperation. In correspondence, the analysis of South Korea's role as a supporter of multilateralism in the international nuclear non-proliferation regime focuses on its efforts to cope with North Korean nuclear issue.

While South Korea's participation in diverse international arrangements within the domain of non-proliferation regime, such as the nuclear technology R&D and global security initiatives, examined in the previous section serve as important evidence for its support of multilateralism, it should be noted that the nature of those involvements are more reactive than proactive. In comparison, the subsidiary strategies and initiatives seeking multilateral resolution as observed from South Korea's engagement with North Korea's nuclear issue over different administrations since the 1990s provide a stronger case for South Korea as a supporter of multilateralism.

¹⁰³ Robert Keohane, "Multilateralism: An Agenda for Research." *International Journal* Vol. 45, No.4 (1990): 731-764.

Management of North Korea Nuclear Crisis: 1980 - 2018

With the dampening of tensions from the Cold War, prior to the simultaneous admission of the two Koreas in the UN in 1991, the South Korean president Roh Tae-Woo (1988-1993) gave a speech at the UNGA for the first time in 1988; in effort to establish an international conference for peace negotiation in the Korean peninsula by engaging with the Communist bloc under his *nordpolitik*, Roh “called for a six-nation consultative conference for peace” composed of the US, SU, China, Japan, and the two Koreas “to lay a solid foundation for durable peace and prosperity in Northeast Asia [and to] create an international environment more conducive to peace in Korea and reunification of the peninsula.”¹⁰⁴ While the SU and Japan supported South Korea’s call for the ‘six nation consultative conference for peace’, the tepid response from the US and China, as well as North Korea’s opposition which demanded the normalization of its relations with the US and Japan first, hindered the initiative from making practical results.

Against the increasing threats of North Korea’s potential nuclearization, Kim Young-Sam (1993-1998) administration pursued more active participation in the international institutions under *new diplomacy* to alleviate the tensions between the two Koreas and achieve regional peace and stability; to this end, South Korea not only increased its participation in the multilateral cooperation but also attempted to increase North Korea’s involvement simultaneously.¹⁰⁵

¹⁰⁴ Paul Lewis, “South Korean Chief, at U.N., Calls for World Talks and Unification,” The New York Times (1988/10/19) from <https://www.nytimes.com/1988/10/19/world/south-korean-chief-at-un-calls-for-world-talks-and-unification.html>

¹⁰⁵ Gilbert Rozman et al., “South Korean Strategic Thought toward Asia,” Palgrave Macmillan

South Korea proposed the Northeast Asia Security Dialogue (NEASED) at the ASEAN Regional Forum (ARF) in 1994, in purpose to practice confidence building in Northeast Asia with the US, Russia, Japan, China, and the two Koreas. In an attempt to emulate the Conference on Security and Cooperation in Europe (CSCE), South Korea suggested the six principles for the NEASED as “respect for sovereignty and territorial integrity, nonaggression and nonuse of force, nonintervention in domestic affairs, peaceful resolution of disputes, peaceful coexistence, and respect for democracy and human dignity.”¹⁰⁶ Yet, the NEASED failed to produce substantive outcome as China and North Korea expressed disinterest in the proposal.

In the following progressive administrations of Kim Dae-Jung (1998-2003) and Roh Moo-Hyun (2003-2008), the notion of South Korea as a promoter of regional cooperation and improving the relations of the two Koreas were perceived as interlinked and complementary. Kim Dae-Jung clarified that South Korea had no intention to absorb North Korea in his inauguration speech, and in keeping with his *sunshine policy*, South Korea aimed to ameliorate North Korea’s *tong-mi-bong-nam* policy - the strategic exclusion of South Korea while only negotiating with the US – through ensuring a cooperative and stable environment. Accordingly, South Korea promoted the East Asia Vision Group in the ASEAN +3 Summit in 1998 to discuss the regional security issues and cooperation agenda

US, (2008): 235

¹⁰⁶ Michael J. Green and Bates Gill, “Asia's New Multilateralism: Cooperation, Competition, and the Search for Community,” *Columbia University Press* (2009): 82

in civilian-led multilateral mechanism; following the 2000 South-North Summit, North Korea was included in the ARF as the 23rd member which was considered a progress as it facilitated an opportunity for a multilateral discussion on the nuclear and security issues of the region.¹⁰⁷ Under the Roh Moo-Hyun administration, South Korea promoted the Northeast Asia Cooperation Initiative and established a Presidential Commission on Northeast Asian Cooperation to further the assumption of the role of regional balancer and catalyst for cooperation.¹⁰⁸ Although ultimately encountered a failure in inducing North Korea's denuclearization, the monumental six rounds of Six-Party Talks from 2003 to 2007 which resulted in the agreed Joint Statement of 2005 and the establishment of the multilateral working groups on the five principles – “denuclearization of the Korean peninsula, normalization of DPRK-US relations and DPRK-Japan relations, economy, and energy cooperation, and Northeast Asia Peace and Security Mechanism¹⁰⁹ - represents the first multilateral mechanism in the region on the issues of security and nuclear threats. Evaluation of the Six-Party Talks and analyzing the causes of failure, such as lacking unity, weak institutional basis, and consequent political stalemates, are beyond the scope of this paper. Rather, this paper focuses on South Korea's efforts to sustain the multilateral cooperation in its engagement with North Korea's nuclear issues,

¹⁰⁷ Gilbert Rozman et al. (2008): 236

¹⁰⁸ Bernhard Seliger and Werner Pascha, “Towards a Northeast Asian Security Community: Implications for Korea's Growth and Economic Development,” *Springer-Verlang* (2011): 32

¹⁰⁹ T.J. Pempel and Chung-Min Lee, “Security Cooperation in Northeast Asia: Architecture and Beyond,” Routledge (2012): 158

as seen in its offer of two gigawatts of electric energy to North Korea in 2005 in return for North Korea's agreement to abandon its nuclear weapon, to appease both North Korea and the US to resume the talks. Considering the lacking experience of the region's multilateral framework for security cooperation, complicated geopolitics of power, unsettled historical conflicts in contrast to the economic interdependence, the continuous efforts to establish multilateral cooperation and repeated practice of such mechanism is ultimately mandatory, in order to secure regional stability and peace.

Under the conservative administrations of Lee Myung-Bak (2008-2013) and Park Geun-Hye (2013-2017), the tone of South Korea's engagement with North Korea changed from unconditional to conditional, and from soft-lined to hard-lined. While the inter-Korean relations deteriorated, South Korea under Lee Myung-Bak continued to seek multilateral resolution for the regional security; for instance, South Korea and the US proposed for the five-party talks without North Korea in purpose to force North Korea back to the negotiation table. While Japan welcomed the five-party proposal, Russia and China opposed to such convention.¹¹⁰ During Park Geun-Hye's term, South Korea adopted a softer approach under her *trustpolitik*. Park Geun-Hye introduced the Northeast Asia Peace and Cooperation Initiative (NAPCI) which sought trust and confidence building of the regional actors on less sensitive issues such as environmental protection and disaster relief, prior to discussing politically sensitive matters

¹¹⁰ Ibid: 159

including security and denuclearization. Although the participation of North Korea was not realized and the outcome of the initiative was insignificant, the NAPCI managed to induce the regional cooperation on nuclear safety as an intergovernmental mechanism among South Korea, China, and Japan in the Top Regulators Meeting (TRM) and additionally the US and Russia in the TRM Plus (TRM+).¹¹¹

Since the inauguration in 2017, Moon Jae-In administration introduced the Northeast Asia Plus Community for Responsibility-sharing (NEAPC) that aims to make progress in peacebuilding and economic integration of the two Koreas. While the two sets of bilateral meetings of South-North Summit in 2018 and the US-North Summit in 2019 was observed, the future of North Korea's denuclearization and peace in the Korean peninsula remains in uncertainty.

Although the majority of the multilateral initiatives pursued by South Korea to engage with North Korea's nuclearization and regional security produced modest outcome, the continued efforts throughout different administrations since the 1980s serve as important evidence in determining South Korea as a supporter of multilateralism. In addition, South Korea's repetitive addressing of the North Korea's nuclear threat on both the regional and global security, as well as urging North Korea to return to NPT and denuclearize in the major international conferences such as the NPT RevCon could be understood in

¹¹¹ Niklas Swanstrom, "The Case for Multilateralism: The Korean Peninsula in a Regional Context," Institute for Security & Development Policy (2020)

the similar vein of resorting to multilateralism since it increases the pressure from the international community.

4.3 South Korea as a Supporter of Global Nuclear Order

The middle power's role as a supporter of international order are primarily defined by the compatibility of the state's priority of values and vision with that of the international system. In this section, South Korea's support of the international nuclear order are examined based on its internal and external means to comply with the international norms and standards; internally, the domestic legislation and export control systems in reference to the international standards are analyzed, and externally, its stance towards the key treaties and principles of NPT observed in the NPT RevCons and international summits are taken into consideration.

South Korea's Stance on Key Treaties and Non-Proliferation Principles

In light of the substantive issues in the non-proliferation regime as introduced in Chapter III of this paper, South Korea has maintained a neutral position albeit certain aspects of its stance imply the supportive inclination more towards the NWS than the NNWS, as one of the military allies of the US. Rather than clearly taking a single side among the divided parties and thereby seeking revisionism of the current international nuclear order, South Korea's efforts to incorporate both sides' arguments are considered as system-supportive; however, it should also be noted that the notion of supporting the current international nuclear order could potentially be seen as acquiescing to the NWS' ascendancy, or turning a

blind eye to their conflict as a third-party state that merely offers rhetorical lip-service from the NNWS' perspective.

On several fronts, South Korea has shared the intention of the NNWS in the substantive fault lines of the international nuclear order. First, South Korea was one of the first countries to sign the CTBT upon its opening for signature in 1996 and ratified the treaty in 1999. Since then, South Korea has been encouraging the early entry into force of CTBT in the NPT RevCons and it continues to demonstrate the national commitment towards the treaty as the Korean Ambassador Shin Dong-Ik was elected a chairman of the CTBTO Preparatory Committee in 2019 by consensus.¹¹² Second, South Korea has been supporting the negotiation of FMCT in CD since the 2000s and participated in the high-level FMCT preparatory group in 2017 and 2018, as well as in the Group of Governmental Experts in 2014 to 2015, to examine the possible ways to make progress in the negotiation of the treaty. In the 2nd Ministerial Meeting of Stockholm Initiative on Nuclear Disarmament, South Korea reiterated its position to call upon the NWS and the non-NPT-signatories with nuclear weapons to resume the negotiations for FMCT.¹¹³ Third, South Korea directly

¹¹² In 1999, South Korean Ambassador Ban Ki-Moon chaired the CTBTO Preparatory Committee for the first time. With the appointment of Ambassador Shin in 2019, the issue of denuclearizing North Korea was chosen as one of the policy making agenda for the committee. "2019 Annual Report", 54th *CTBTO Preparatory Commission* (2019) from https://www.ctbto.org/index.php?id=1281&no_cache=1&symbol=CTBT%2FES%2F2019%2F5&language=ENGLISH

¹¹³ "Annex: Stepping Stones for Advancing Nuclear Disarmament," the 2nd Ministerial Meeting of the Stockholm Initiative for Nuclear Disarmament (2020/02/27) from <https://www.swedenabroad.se/en/embassies/un-geneva/current/news/stockholm-initiative-for->

called for a conference on the Middle East NWFZ for the first time in the 2015 RevCon¹¹⁴ albeit in a relatively weaker nuance than the NAC or the Arab group. Previously in the 2005 and 2010 RevCon, South Korea's reference to NWFZ in both national statements and working papers was limited to encouraging the additional establishment of NWFZs and emphasizing the need for a similar measure to be taken in the Korean peninsula. As a NNWS, South Korea's overall view towards the issue of priority conflicts of the three pillars and nuclear disarmament is more or less similar to that of the NAM and other NNWS in general; typically, South Korea's support for encouraging nuclear disarmament and strengthening the non-proliferation measures is most prominent on the subjects related to North Korea's nuclearization, and the majority of its system-supportive appeal is caused by the prolonged security threats from North Korea.

On the contrary, South Korea has been assuming a more passive and limited stance towards the issue of peaceful use of civil nuclear energy and politically sensitive topics that has the potential to deteriorate its alliance with the US. In the submitted working paper for the 2005 RevCon, South Korea stated that while it recognizes the importance of the states' inalienable rights, "the right to peaceful uses of nuclear energy under Article IV of the Treaty is not absolute, but conditioned upon compliance with non-proliferation and safeguards

[nuclear-disarmament/](#)

¹¹⁴ Statement by Shin Dong-Ik, Deputy Minister for Multilateral and Global Affairs of South Korea, 2015 NPT RevCon from https://www.un.org/en/conf/npt/2015/statements/pdf/KR_en.pdf

obligations under Articles II and III.”¹¹⁵ Also, in its national statement in the 2010 RevCon, South Korea stated that “the NPT is faced with unprecedented challenges in each of the three pillars. The most serious among them is the challenge of nuclear proliferation. At the heart of the reason are the inherent loopholes in the NPT whereby determined proliferators can develop nuclear weapons capabilities under the guise of peaceful uses of nuclear energy.”¹¹⁶ Given the conflict between the NWS, mainly the US, and NNWS on the interpretation of the Article IV in Chapter III of this paper, such standpoint implies that South Korea holds a similar priority of the NWS where the non-proliferation comes before the access for peaceful use of nuclear energy. Since the concluding of IAEA AP in 2004, South Korea, alongside the US, consistently argued for the universalization of AP in the three NPT RevCons in 2005, 2010, and 2015. In the similar vein of the Article IV conflict between the NWS and NNWS, the universalization of IAEA AP is a contentious issue not only between the NWS and NNWS, but also among the NWS themselves; states such as Brazil and Egypt stated that concluding the AP with IAEA is a voluntary matter and they do not plan to do so until further progress in nuclear disarmament is observed from the NWS.¹¹⁷ Lastly, South Korea has consistently opposed to the TPNW from the

¹¹⁵ “Views on substantive issues of the 2005 Review Conference,” (NPT/CONF.2005/WP.42) from <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N05/348/23/PDF/N0534823.pdf?OpenElement>

¹¹⁶ Statement by Cho Hyun, Deputy Minister for Multilateral and Global Affairs of South Korea, 2010 NPT RevCon from https://www.un.org/en/conf/npt/2015/statements/pdf/KR_en.pdf

¹¹⁷ John Carlson, “Future Directions in IAEA Safeguards,” *Managing the Atom Project*, *Belfer*

beginning of the discussion for the treaty's establishment in 2016.¹¹⁸ Since then, South Korea neither participated in the negotiation of the TPNW nor voted on the treaty's adoption in 2017, as well as voting against the UN General Assembly resolution 74/L.12 which called upon the non-signatories of TPNW to sign, ratify, accept or accede the treaty in 2019; in the 2020 NPT RevCon Preparatory Committee meeting, South Korea stated that the TPNW "crafted without the participation of nuclear-weapon states cannot but bear intrinsic limitation"¹¹⁹ and clarified that the stance will not change in the foreseeable future alongside the NWS and majority of their allies. Moreover, in 2017, President Donald Trump and Moon Jae-In issued a joint statement where the two allies reconfirmed the US' "commitment to provide extended deterrence to the ROK, drawing on the full range of the US military capabilities, both conventional and nuclear."¹²⁰

Compliance to International Norms: Legislation and Export Controls System

In its effort to promote the peaceful use of civil nuclear energy as written in the Article IV of the NPT, the IAEA provides assistance to states for legal framework to oversee nuclear activities. The IAEA defines nuclear law as "the body of

Center, (2018)

¹¹⁸ "Taking Forward Multilateral Nuclear Disarmament Negotiations" (UNGA/RES/71/258)

¹¹⁹ "Cluster I (Disarmament) – Statement by South Korea," The Preparatory Committee for the 2020 NPT RevCon, 2nd Session (2018/04/26) from https://reachingcriticalwill.org/images/documents/Disarmament-fora/npt/prepcom18/statements/26April_Republic-of-Korea.pdf

¹²⁰ "Joint Statement between the United States and the Republic of Korea" (2017/06/30) from <https://www.whitehouse.gov/briefings-statements/joint-statement-united-states-republic-korea/>

special legal norms created to regulate the conduct of legal or natural persons engaged in activities related to fissionable materials, ionizing radiation and exposure to natural sources of radiation,”¹²¹ where the primary objective of the law is to “adequately [protect] individuals, property, and the environment.” The international standard of nuclear law comprises four key elements. First, it should be recognized as part of general national legislation and incorporate different rules in consideration of the special ‘risk and benefit’ nature of the technology. Second, the regulation is required to appropriately reflect “hazards and advantages for social and economic development.” Third, the special legal norms of nuclear law relate to “the conduct of legal persons, including commercial, academic, scientific and governmental entities, as well as of individuals.” Lastly, the element of radioactivity as a result of “the use of fissionable material or ionizing radiation,” should be the central defining feature of the legal regime.¹²² Furthermore, the IAEA defined the following 11 fundamental principles of nuclear law as the key difference from other aspects of national law; the principles of safety, security, responsibility, permission, continuous control, compensation, sustainable development, compliance, independence, transparency, and international cooperation.

The evolution of South Korea’s legal amendments in conformity with the international non-proliferation norms under the established nuclear order

¹²¹ Carlton Stoiber et al., “Handbook on Nuclear Law,” IAEA (2003): 4

¹²² Ibid. 4

could be broken down into four periodic stages. After joining the IAEA in 1957, South Korea passed the Atomic Energy Act in 1958 and established the first governmental agency, the Office of Atomic Energy, to comprehensively manage nuclear energy and relevant activities of research, development, and use. In the 1970s, with the first operation of a commercial nuclear reactor, South Korea enacted relevant legislations for nuclear safety such as the Nuclear Damage Compensation Act (1969) and Act on Indemnification Agreement for Nuclear Liability (1975). The Korea Institute of Nuclear Safety Act (1989) led to the establishment of KINS. In the 2000s, South Korea expanded the scope and diversity of legislation in accordance with the development of domestic nuclear technology; the Radiation and Radioisotope Use Promotion Act (2003), the Act on Physical Protection and Radiological Emergency (2004), the Act on the Promotion and Management of Non-Destructive Testing Technology (2006), the Fusion Energy Development Promotion Act (2007), and the Radioactive Waste Management Act (2009) all the key examples. With the 20th amendment of the Nuclear Safety Act, the Korea Institute of Nuclear Non-proliferation and Control (KINAC) was established to oversee pertinent activities of non-proliferation and safeguards measures on export and import to enhance the national credibility and transparency on nuclear activities.¹²³ Lastly, following the Fukushima accident in 2011, South Korea divided the previous Atomic Energy Act into Nuclear Energy Promotion Act and Nuclear Safety Act in order to endorse the IAEA Basic

¹²³ Jong-Chun Kim, “Development of Nuclear Legislation in Korea,” Korea Legislation Research Institute, (2016): 35

Safety Standards and the Convention on Nuclear Safety. In addition, the Act on the Establishment and Operation of the Nuclear Safety and Security Commission (NSSC) led to the creation of NSSC. With the separate enactment in 2011, relevant laws and decrees of nuclear safety and damage compensation were transferred under the NSSC's jurisdiction and that of nuclear promotion was transferred to the Ministry of Science and Information and Communication Technology (MSIT).¹²⁴

Since 2008, South Korea established and operated a one-stop online export controls system under the management of NSSC and KINAC, in effort to implement the pertinent international measures, namely, the UNSCR 1540, NSG guidelines, and ZC trigger lists; domestically, the online system incorporates MTIE's Foreign Trade Act, NSSC's Nuclear Safety Act, Defense Acquisition Program Administration's Act, and Ministry of Unification's Inter-Korean Exchange and Cooperation Act. The Nuclear Export Promotion Service (NEPS) is composed of four sets of configurations; 1) the web portal which provides information on export control and guidelines for implementation, 2) the Nuclear Project Management Export System (N-PEMS) for integrated management on the bulk items of strategic goods, 3) the Automated Licensing system to process civil petitions on the classification of the goods and export licensing, and 4) Information Sharing System (ISS) to provide the transfer status of goods to the importing country. Once the nuclear-related companies' application is submitted

¹²⁴ Ministry of Science and ICT, *2018 Nuclear Energy White Paper*, (2018)

to NSSC via NEPS, the document gets sent to KINAC for technical review; then, NSSC consults the evaluation results with MOFA and reports to Korea Customs Service for clearance on the subject item before approving license to the company.¹²⁵ Any relevant items or technology for export that are subject to NSG's trigger list items and dual-use items require the license and South Korea conducts additional review for validating the importer to strengthen the end-use control; furthermore, South Korea categorizes different countries into Region A and B¹²⁶ to enhance the efficiency and minimize the proliferation risks involved in nuclear exports. Although it is not clarified in the legislation, South Korea requires the importing country to conclude a NCA prior to trade, similar to the US which imposes the most demanding terms for non-proliferation guarantees in nuclear trades. Overall, South Korea's nuclear export controls system is to be evaluated as successful in regards to its efficiency,¹²⁷ level of proliferation-resistance and conformity to the international non-proliferation norms for export controls.¹²⁸

¹²⁵ https://www.neps.go.kr/kinac/en/sub02_1.do

¹²⁶ The Region A countries refer to the states who are parties to all of the following international nuclear and weapons of mass destruction agreements: NSG, Australia Group, Wassenaar Arrangement, Missile Technology Control Regime, Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons (Biological and Toxin) and on their Destruction. The Region B countries are the states who are not parties to all of the agreements. (Pillsbury Report)

¹²⁷ In comparison to other nuclear exporters, South Korea's application processing time is significantly shorter which generally takes 5 to 15 days; the US processes the application for 6 to 14 months, France 9 months, Japan 90 days, and Russia between 25 and 45 days.

¹²⁸ Glasgow, J. A., Teplinsky, E., & Markus, S. L., "Nuclear Export Controls: A Comparative Analysis of National Regimes for the Control of Nuclear Materials, Components and

In sum, South Korea's internal and external measures for complying with the international norms and standards were found sufficient to be considered as system-supportive for the current international nuclear order. While the domestic arrangements of legislation, export control systems, and government agencies were sufficient or above the international standards, South Korea's stance towards the TPNW and universalization of IAEA AP demonstrated that it holds a similar view with the NWS on the fault lines of the non-proliferation regime where the access to the nuclear energy for peaceful use should be granted on the condition of nuclear non-proliferation, rather than emphasizing the text of inalienable rights as the NNWS argue. Nonetheless, given the prolonged security threats from North Korea's nuclearization and South Korea's dependency on the US nuclear umbrella as a countermeasure, such stance stands to reason. In consideration of South Korea's system-supportive behavior such as calling for the early adoption of CTBT, resumed negotiation for FMCT, and domestic arrangements in compliance with international standards, South Korea satisfies the middle power role as the supporter of international nuclear order.

4.4 Assessment and Limitations

Overall, the notion of South Korea as a nuclear middle power is found to be valid on the basis of three substitutable indicators of good international citizen, supporter of multilateralism, and supporter of international nuclear order. The

Technology," *Pillsbury Winthrop Shaw Pittman LLP*, (2012).

international recognition from South Korea's contribution to strengthening the global non-proliferation regime has been observed in its successful hosting of several key initiatives and summits and participation in primary consultative groups, as well as the acknowledgement of its technological advancement for nuclear safety and well-established legislation and export control system for non-proliferation. The analysis result strongly indicates that South Korea's status as a nuclear middle power is not just a self-claimed identity or a mere rhetoric for foreign policy.

Nonetheless, the analysis also suggests that South Korea's nuclear middle powermanship is limited on several fronts, as its contributions are more lopsided than balanced, its behaviors are more passive than proactive, and it holds certain elements that could potentially be understood as being selective. First, South Korea's contribution to strengthening the non-proliferation regime is predominantly associated with the promotion of peaceful use of nuclear energy, especially in the fields of nuclear export, R&D for nuclear safety, and SMRs. Compared to other nuclear middle powers of similar capacity and international standing such as Japan, Australia, and Canada, South Korea lacks participation in the global non-proliferation initiatives such as the Non-proliferation and Disarmament Initiative (NPDI). Second, while South Korea demonstrates an exemplary case of good compliance to international norms in the post-Fukushima era, the lacking cases of demonstrating its leadership and participation on certain sensitive initiatives deteriorates its status as a committed and consolidated nuclear middle power for global non-proliferation. In consideration of South

Korea's participation in the global non-proliferation initiatives, the majority of it is more reactive than proactive in nature except for the ones related to the North Korean nuclear crisis. Lastly, South Korea's claim on its commitment to global non-proliferation has the potential to be regarded as selective and calculative, as it has a tendency to avoid politically sensitive treaties and initiatives that could deteriorate its relations with North Korea and the US. While South Korea advocated for CTBT and FMCT, it did not participate in the Humanitarian initiative, TPNW, and was hesitant for years prior to joining PSI and GICNT. Given the complicated geopolitical situation of the Korean peninsula, South Korea's relatively passive and ambiguous behavior on certain treaties and initiatives stand to reason, however, such behavior could be perceived as selectively being a good international citizen, especially from the NNWS' perspective. Moreover, South Korea has been a supporter of universalization of AP – which has been a controversial issue not only from the NNWS which consider the universalization of AP as an unnecessary measure that violates their nuclear sovereignty but also between the NWS themselves - since 2004 alongside the US, and the international community could potentially conclude that South Korea's perception towards the global non-proliferation regime is more similar to that of NWS than NNWS. In order to advance itself towards more consolidated and committed nuclear middle power, South Korea is required to overcome the abovementioned limitations.

CHAPTER V

Policy Measures to advance South Korea's Nuclear Middle-Powermanship

This chapter seeks to provide specific policy suggestions to advance South Korea's nuclear middle-powermanship and thereby strengthen the non-proliferation regime. While the previous literatures which applied middle power concept to nuclear issues have verified 'why' certain states are middle power and 'what' viable roles they ought to play for enhancing global non-proliferation, they commonly lack to propose 'how' these states could achieve that end. This paper has selected South Korea as the case study to clarify the definition of nuclear middle power and evaluated its performance within the global non-proliferation regime based on the role-theory framework. Accordingly, this chapter aims to extend the previous literatures by specifying 'how' a nuclear middle power could expand its capacity by policy improvements through the case of South Korea.

Ensuring commitment and Enhancing National Credibility for Global Non-Proliferation

In order to bolster the nuclear middle powermanship, South Korea is required to enhance its national credibility and the level of commitment for global non-proliferation; to this end, signing and ratifying TPNW and joining NPDI is recommended. So far, South Korea, like many of the US military allies such as Japan and NATO members, has abstained in the voting for TPNW and voiced for the need of more rational nuclear disarmament measures. As reviewed earlier, the

primary rationale behind South Korea's absence in both TPNW and NPDI is to minimize the worsening of its relations with the US and DPRK; as a state under the direct threat of North Korea's nuclear threat, South Korea's efforts to guarantee its national security through US nuclear umbrella while balancing between the US and DPRK as the mediator towards peace and denuclearization negotiation is reasonable. Nonetheless, while South Korea may be bound by the complicated security dynamics of the peninsula in the short-term, its ultimate objective regarding the nuclear disarmament in the long-term should also be highlighted. In the long-term, South Korea's objective is not to achieve security dominance over North Korea where it continues to benefit under the US umbrella and unilaterally pressure North Korea for CVID; rather, the final objective is to achieve peace and stability in the Korean peninsula in the complete absence of nuclear weapons.

One of the key strength of middle powers in shaping of the international order is through bridging and mediating between different parties in conflict, where the source of the advantage originates from gaining the moral high ground in its appeal to the established international values. Compared to other similar nuclear middle powers such as Japan and Australia which also did not participate in TPNW, South Korea has the North Korean factor as a 'justifiable excuse' in not supporting TPNW and therefore is more advantageous in securing the morale high ground when assuming the mediator role in conflict between the NWS and NNWS, or the Arab groups and the allies of Israel in the regional conflict; however, with the signing of TPNW and participating in NPDI, South Korea

could further its role as a gap-bridger among the divided members by acquiring broader source of appeal and enhanced national reputation as an objective good international citizen in compliance with the established international norms. In this regard, South Korea should consider signing and ratifying TPNW which contributes in the process of achieving the long-term objective of South Korea, as well as strengthening its national credibility for non-proliferation commitment which expands its 'niche' potential for demonstration of the middle power leadership.

In addition, South Korea's current nuclear legislation does not directly mention the term 'non-proliferation' albeit the arranged measures prevent such possibility. For the symbolic value and devoting additional commitment for global non-proliferation, the separate enactment of Non-Proliferation Act and establishment of independent governmental division to oversee the relevant issues is recommended.

Fostering stronger domestic non-proliferation culture through public education and outreach

For the past years, the public survey on South Korea's nuclearization against the North Korean nuclear threat - 2016 (52.5%)¹²⁹, 2017 (60%)¹³⁰, 2019 (53.8%)¹³¹ - has indicated that more than half of the South Koreans have continued to support the idea. As the 2017 Gallup survey has shown, many of the proponents for South Korea's nuclearization were people above the age of 30s and their support for domestic nuclear weapons were largely formed in the absence of the consequences of acquiring nuclear weapons in the current international system. In other words, the survey results show that the average South Koreans lack the deep understanding of the consequence of nuclearizing within the contemporary global non-proliferation regime. While the South Korean public became skeptic and/or familiar with the repeated stick and carrot strategy of North Korea in its development of nuclear weapons and subsequent use of nuke as a bargaining chip, the detailed education on the non-proliferation regime and South Korea's commitment for global nuclear non-proliferation has not been popularized as much. Foreign media often cites the public survey results seriously, and when

¹²⁹ Lee, H. (2016, February 14). Pro-Nuclearization 52.5%...sustaining denuclearization 41.1%. *Yonhap News*. Retrieved from <https://www.yna.co.kr/view/AKR20160214021600001>

¹³⁰ Lee, M.Y. H. (2017, September 13). "More than ever, South Koreans want their own nuclear weapons," *The Washington Post*, Retrieved from <https://www.washingtonpost.com/news/worldviews/wp/2017/09/13/most-south-koreans-dont-think-the-north-will-start-a-war-but-they-still-want-their-own-nuclear-weapons/>.

¹³¹ Yang, Y. (2019, March 27). Result of Public Opinion Survey "53.8% of South Koreans support domestic nuclearization". *Pennmike*. Retrieved from <https://www.pennmike.com/news/articleView.html?idxno=17604>

connected with North Korea's notorious behavior on nuclear weapons and South Korea's mixed records of non-proliferation commitment from the past, South Korea's general perception as a good international citizen is potentially deteriorated and such could send a misleading signal to the international community that South Korea still pursues a nuclear weapon when it is not the case in reality. Through increased promotion and education via public outreach programs, consolidation of domestic non-proliferation culture is required in order to advance the national capacity as a committed nuclear middle power.

Expanding the Political Agenda for Global and Regional Cooperation

The majority of South Korea's international and regional cooperation is focused towards R&D and technological advancement for nuclear safety. While providing technological training for developing countries and nuclear newcomers are important aspect of contribution in strengthening the global non-proliferation regime, South Korea also should take more assertive role in incorporating nuclear security and safety into the political agenda of regional cooperative bodies. One of the primary intergovernmental framework in the Asia-Pacific is the Regional Cooperative Agreement (RCA) which works on the R&D and training projects related to nuclear power and technology; the topics of the latest cooperative projects include industry, agriculture, human health, and environment associated with the use and utilization of nuclear energy. South Korea should take initiatives to include nuclear safety, and eventually nuclear security, in to the political agenda of RCA and broaden the scope of cooperation in Asia.

Sustaining Nuclear Export Competency and Streamlining Nuclear Policy

As analyzed in Chapter III, sustaining the national nuclear export competency and certain percentage of market share is a primary interest for nuclear exporting countries not just for the economic gains but also for the subsequent influence in the international nuclear exports control regime. Against the developing trend of sharp rise of China and Russia and decline of the traditional nuclear vendors of the West, South Korea is currently holding the middle ground and it is only logical to conclude that decline of the market share is directly correlated to the decline of political status and influence in the exports control regime. In order for South Korea to secure and advance the current nuclear middle power status, sustaining the national competency in the nuclear reactor exports and increasing the market share is a necessary strategy. To this end, several key elements of the recent nuclear policies of South Korea lacks coherency and requires to be streamlined. First, South Korea should clarify the state's position on nuclear energy and strengthen the governmental support for its exports; the current 'nuclear phase-out' policy is required to be publicized as energy transition policy. While South Korea's energy transition policy refers to the long-term decrease of nuclear energy dependency and substituting it with renewable energy over 60 years, the foreign media and potential nuclear newcomers could potentially misunderstand such intention as if South Korea's cutting off all of nuclear energy operation over short time. The notion of cutting out domestic nuclear energy due to safety concerns while promoting foreign exports not only deteriorates South Korea's national competency in nuclear exports but also could be sending confusing signals to the international community in the context of antinomy.

Moreover, while expanding the scope of national nuclear export to incorporate the nuclear decommissioning industry as the MTIE has announced in 2019 is a positive factor, the sudden shift in strategy to solely focus on the decommissioning industry is not ideal; rather, the pursuit of new challenge in the nuclear decommissioning should be initiated in parallel to the current investment of nuclear reactor export industry. Behind the success of Chinese and Russian SOEs, strong state support in concluding the deal with newcomers' government and lenient financial terms existed. In this regard, South Korean government should further clarify its position towards the management of nuclear energy and demonstrate stronger state support for nuclear exports.

CHAPTER VI

Conclusion

6.1 Conclusion

This paper has sought to analyze the key issues of the contemporary global nuclear non-proliferation regime and verify the role of middle powers against the challenges based on the middle power role-theory framework with the case study of South Korea. Currently, the regime suffers internally from the political and regional fragmentation among the party states and externally from the states not in compliance with the established norms and treaties. The analysis indicated that the nature of the contemporary challenges is primarily associated with the political confrontation among the participants within the established international institution and principles, rather than caused by the international power vacuum to oversee the relevant matters. Against this background, the role of middle powers based on their system-supportive behavior such as institution building, gap-bridging, and conflict mediating has been highlighted as the potential resolution has been highlighted. Given the nature of conflict among the confronted parties in the contemporary issues of the regime and the unique structure of division between the NWS and NNWS, middle powers of competency and capacity hold potential to gather the fragmenting parties and progress towards the common goal; the basis of the middle powers' role and behavior originates from their compliance and good practice of international norms which provides them with the moral high ground, and consequently, their

appeal becomes more feasible than both the NWS and the NNWS.

Accordingly, the middle power role-theory framework was utilized to analyze the case of South Korea in the global nuclear non-proliferation regime to verify its status as a competent nuclear middle power and to suggest practical and detailed policy alternatives to advance the middle powermanship and thereby further the contribution to strengthening the regime. On various fronts, South Korea provides an interesting and unique case as a middle power in the contemporary international nuclear order. First, South Korea is ranked as the world's 5th largest nuclear energy generating state which is the highest record as a NNWS. Second, among the remaining competent nuclear vendors – US-Japan, Russia, China, France - South Korea is the only NNWS that is placed in the middle of declining traditional nuclear vendors and rising Chinese and Russian SOEs. Third, South Korea is the state directly involved and under the threat of North Korea's nuclear crisis. Fourth, along with Canada and Australia, South Korea is one of the few countries whose government explicitly mentioned middle power as a national foreign affairs strategy since the 2008 Lee Myung-Bak administration's Global Korea policy. Lastly, South Korea's relatively neutral stance between the NWS and NNWS based on its support for key treaties such as CTBT, FMCT, and universalization of AP as a non-Western nuclear state provides for a unique case of middle power.

On the three criteria of middle power's role - international good citizen, supporter of multilateralism, and supporter of international (nuclear) order – conjoined by the international recognition for each category, South Korea

provided sufficient cases to satisfy each standard and demonstrated that the notion of ‘nuclear middle power South Korea’ is not a self-claimed identity or foreign policy rhetoric. Nonetheless, this paper also found that South Korea’s contribution in the non-proliferation regime as a middle power held several limitations; first, the majority of its contributions were associated with the technological advancement and nuclear R&D; second, the nature of its participations in the global initiatives and summits were more reactive than proactive; third, its behavior held several elements that could be perceived as being selective and lacking neutrality, and more inclined towards the NWS than the NNWS.

In order to overcome the analyzed limitations of South Korea’s nuclear middle powermanship and advance its status and contribution to strengthening the regime, this paper has suggested the following policy recommendations. First, enhancing national credibility and ensuring its commitment for global non-proliferation is required. To this end, signing and ratifying TPNW as well as joining the NPDI and separate enactment of the Non-Proliferation Act is recommended. While South Korea’s tendency to avoid politically sensitive treaties and initiatives that could deteriorate its relations with the US and North Korea stands to reason, demonstrating stronger commitment for non-proliferation through signing TPNW and joining NPDI, and thereby furthering its compliance to international non-proliferation norms is necessary to consolidate its nuclear middle power status. Second, fostering stronger domestic non-proliferation culture through public outreach and education program is

required. Third, South Korea is required to take a more assertive role in expanding the political agenda for regional and global nuclear cooperation. Lastly, sustaining the national nuclear export competency and streamlining nuclear policy to simultaneously pursue the development for nuclear decommissioning industry and nuclear reactor export industry is recommended.

6.2 Future Avenues of Research

This paper has provided policy recommendations on advancing middle powermanship and enhancing the contribution to strengthening the global nuclear non-proliferation regime for South Korea in accordance with the middle power role-theory framework. Future studies could also adopt different case studies of nuclear middle power candidates such as Australia, Japan, and Canada to verify their nuclear middle power status and assess their performance. By accumulating additional case studies and comparing the similarities, more specific and viable areas of cooperation among nuclear middle powers could be explored.

Furthermore, while the policy recommendations from this thesis sought to provide more detailed and comprehensive suggestions on how South Korea could advance its nuclear middle powermanship from the system-level, future studies could contribute more in-depth policy alternatives from the state-level. As mentioned in this paper, the primary rationale behind South Korea's tendency to avoid politically sensitive treaties and initiatives are largely due to the short-term consequences in its relations with the US and North Korea. By approaching the issue from the state-level, future studies could indicate the advantages and

disadvantages of the proposed policy recommendations and develop more practical short-term strategies for policy makers to take into consideration.

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국문초록

최근의 국제 핵비확산 레짐은 회원국들의 정치적, 지역적 분열로 인해 대내외적으로 적지 않은 문제점을 보이고 있다. 본 논문의 주요 목적은 현대 국제 핵비확산 레짐의 주요 문제들과 한국의 사례 분석을 통해 레짐 내 중견국의 역할에 대해 연구하는 것이다. 또한, 이를 토대로 국제 핵비확산 레짐 강화와 중견국으로서의 역량을 증진 시킬수 있는 정책 제언을 모색하였다.

이러한 연구 목적을 달성하기 위하여, 본 논문은 가장 적합한 분석 모델 채택을 위한 중견국 이론과 역할론에 대한 이론적 논의를 행하였다. 이러한 논의를 참조하여, ‘good international citizen, supporter of multilateralism, supporter of international nuclear order’ 라는 세가지 축을 중심으로 한 three-level 분석 틀을 설정하였다. 이어서 국제 핵비확산 레짐의 역사적 형성 과정과 핵비확산 전략 및 구조, 그리고 레짐 내 최근 문제점들에 대한 중견국의 역할에 대하여 분석하였다. 다음 장에서는, 앞에서 설정된 분석 틀에 입각하여 원자력 중견국으로서의 한국의 역량 평가와 기여 성과에 대해 실증적으로 분석하였다. 마지막으로, 본 논문은 사례 분석의 결과를 토대로 한국이 원자력 중견국으로서의 위상과 역량을 강화하고, 나아가 국제 핵비확산 레짐 강화에 더 효율적으로 기여할 수 있는 정책 방안들을 제시하였다.

주제어: 핵 비확산, 중견국, 역할론, 국제 레짐