

# Correlation Between the Nuclear Industry Development and Democratization in South Korea: Local Communication Do Matter

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## 1. Introduction

### 1.1 Research Question

This paper underscores the importance of communicating with the local residences by analyzing the correlation between South Korea's nuclear industry development and democratization. To put it differently, this paper argues that Korea's democratization and nuclear power development are strongly correlated, thus as democratization solidifies, communication with local residents is crucial.

### 1.2 Story Behind the Research Question

This is indeed the age of Artificial Intelligence (AI). DeepSiC, the recently emerged China's low-cost AI model, stunned the world as it highlighted the intense technological competition in the AI sector. To spearhead in the age of AI, reliable electricity supply is a must. For example, generative AI tools including ChatGPT requires approximately 2.9 Wh (watt-hours) of electricity, which is about ten times the power needed for typical Googling. According to global market research firm called Gartner, the electricity demand for AI data centers is estimated to jump from 74 TWh (terawatt-hours) in 2022 to 500 TWh by 2027. To meet the demand, major United States tech companies have already partnering with small modular reactor (SMR) vendors to secure electricity power via nuclear energy for their data centers.

What measures can South Korea take to ensure a stable and reliable electricity supply? As South Korea is a country that lacks in natural resources, nuclear power serves as a primary energy source. Nonetheless, South Korea has been going through brutal journey to establish a comprehensive electricity supply plan. The road towards smooth nuclear power plant operation has always been bumpy. South Korean nuclear industry also dealt with domino effect on nuclear power plant selection and placing orders for necessary parts and materials.

This paper thoroughly explains how communication with local residents is a critical factor by scrutinizing the correlations between nuclear industry development and democratization.

## 2. Methods

### 2.1 Nuclear Industry Development Measurement

The productivity of the nuclear sector is the tool to measure the degree of nuclear industry development. The study utilizes previous research findings that indicates increased nuclear power plant production brings higher GDP, improved welfare, and lower consumer prices [1].

### 2.2 Democratization Measurement

Daron Acemonglu's concept of inclusive institutions is used to measure the degree of democratization [2]. Acemonglu states that inclusive political institutions provide atmosphere for inclusive economic institutions that affects equitable income distribution and social mobility [3]. Moreover, he argues that well-establishment of democratic institutions fosters society, technological development and capital accumulation, not to mention economic incentives and participation among firms, thus sparking technological innovation [3].

Acemoglu utilizes Freedom House data – the most widely read and cited report that tracks global trends in political rights and civil liberties. Freedom House data is suitable to visualize the degree of democratization as it includes factors that fall under two main categories which are political rights and civil liberties. To be more specific, the factors include electoral processes, freedom of expression, rule of law, freedom of association, independence of the judiciary such as associational and organizational rights. Freedom House uses these factors to rate countries on a scale of 0 to 100 – 100 being the highest level of freedom. Based on the scores, countries are categorized under three groups – free, partly free, or not free. Out of different factors, this study will focus on the factor 'freedom of association' as the number of association

differed as the nuclear industry developed in South Korea.

### *2.3 Conclusion*

The heart of this study lies in its conclusion: from the lens of inclusive institutions, the expansion of nuclear power plant operations contributes to democratization, thereby highlighting the communication with local residents.

## **3. Body**

### *3.1 History of South Korea's Nuclear Power Industry*

The late 1970s was the prime time of South Korea's nuclear power industry. In 1978, the first commercial nuclear power plant called Kori-1 was constructed followed by several more nuclear power plants were constructed during the 1980s. In the 1970s, South Korean politics were far from democratization, often referred to as the "dark age of democracy." The implementation of the Yushin Constitution in 1972, which enabled the president's long-term rule, further distanced the country from democratic principles. However, the centralized planned economy under the authoritarian regime and the close collaboration between the government and large corporations were key factors in the development and construction of nuclear power plants. Consequently, communication with local residents was often overlooked in this social climate.

Stepping into the 21<sup>st</sup> century, democracy started to take root in South Korea and so did the nuclear industry. Communication with local residents were especially notable. Communication with local residents played a crucial role in the construction and operation of nuclear power plants, as public opinions began to influence nuclear policy decisions. For instance, the Moon Jae-in administration reflected local residents' views in the construction of the Shin Kori nuclear power plant [4].

### *3.2 South Korea's Freedom House Index*

Studying the Freedom House index of South Korea, democratization scores have increased over time. This emphasizes the importance of civic engagement and social consensus in the nuclear industry. According to Freedom House data, South Korea maintains high levels of civil liberties and political rights, which supports the notion that public opinions are reflected in nuclear policy.

## **4. Conclusion**

South Korea's democratization has led to institutional changes that emphasize public participation, making communication with local residents an indispensable element in the nuclear industry. Through historical examples and Freedom House data, this study confirms that as democratization becomes more solidified, social consensus and civic engagement become essential in the nuclear sector.

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