

## **Analysis of Public Perception Surveys on Nuclear Energy**

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### **1. Introduction**

Since the commencement of operations at the Kori Nuclear Power Plant (NPP) in 1978, nuclear energy has accounted for more than 30% of Korea's total electricity generation for over four decades. During this period, nuclear technology has advanced rapidly, and nuclear energy has become a cornerstone of the country's energy mix. However, in contrast to these technological advancements, public perception in nuclear energy and its societal acceptance have not significantly improved.

Given its inherent characteristics, nuclear energy is highly influenced by nuclear policies, and public opinion and acceptance play a crucial role in shaping overall nuclear policy. Therefore, ensuring public acceptance is essential for the sustainable development of nuclear energy. To achieve this, it is necessary to analyze the level of public perception and acceptance of nuclear energy, not only in Korea but also on a global scale.

Accordingly, we analyzed surveys on public perceptions of nuclear energy to improve the level of public perception in Korea.

### **2. Materials and Methods**

In this study, we analyze public perception surveys on nuclear energy conducted by the Nuclear Energy Institute (NEI), the Korea Energy Information Culture Agency (KEIA), and the Radiant Energy Group to examine both domestic and international perceptions on nuclear energy. Additionally, we assess these studies by analyzing the number of survey respondents, respondent characteristic, nuclear support and energy attributes [1].

### **3. Results and Discussion**

Since 1983, the NEI has conducted annual surveys to assess public perceptions regarding nuclear energy in United States. In 2024, NEI conducted a public opinion survey of 1,000 American adults to evaluate the acceptance of nuclear power. The survey covered 12 key aspects, including public perception and attitudes toward nuclear energy. The results indicated that 77% of respondents supported nuclear energy, while 23% opposed it. and net support rate (support rate – oppose rate) was 54%. This represents the highest recorded support rate in history, with a continuous increase since 2020. Regarding the continued operation of existing

NPPs, public support increased from 86% in 2021 to 88% in 2024. Similarly, support for the construction of new NPPs increased from 69% in 2021 to 71% in 2024. The survey further revealed that public support for nuclear power generation increased with higher levels of nuclear knowledge. Among respondents with a high level of nuclear knowledge, 88% expressed support for nuclear energy, compared to 54% among those with a lower level of knowledge. 86% of male respondents supported nuclear energy, whereas 70% of female respondents supported it. The survey also examined public support for nuclear power generation across various demographic factors, including age and regional differences.

The KEIA has conducted annual surveys to assess public perceptions regarding nuclear energy in Korea. In 2024, KEIA conducted a telephone survey of 1,000 Korean adults nationwide to evaluate public perceptions of nuclear energy. The survey covered 12 key aspects, including public perception and attitudes toward nuclear energy. Regarding the necessity of nuclear power generation, 80.8% of respondents (37.5% "strongly necessary" + 43.3% "somewhat necessary") considered it essential, while 16.7% (5.1% "not necessary at all" + 11.6% "not very necessary") opposed it. Regarding the License Renewal (LR) of existing NPPs, 67.9% (21.5% "strongly support" + 46.4% "somewhat support") were in favor, whereas 29.7% (11.2% "strongly oppose" + 18.5% "somewhat oppose") were against it. Additionally, the survey examined public opposition to NPP construction in residential areas, high-level radioactive waste disposal facilities, and other nuclear energy-related Korean policy issues.

In 2023, the Radiant Energy Group conducted a global public opinion survey on nuclear energy, covering 20 countries, including the United States and Korea, with a total of 20,122 respondents. Each country had a minimum of 1,000 respondents. Regarding nuclear knowledge and nuclear support, 46% of respondents (21% "strongly support" + 25% "tend to support") expressed support for nuclear energy, while 28% opposed it. and net support rate was 18%. The survey revealed that respondents with a higher level of nuclear knowledge were 2.5 times more likely to strongly support nuclear power than to oppose it. In the case of United States, 46% (23% "strongly support" + 23% "tend to support") of 1,005 respondents supported it, while 28% (12% "strongly oppose" + 16% "tend to oppose") opposed it. And net Support rate was 21%.

59% of male respondents supported nuclear energy, whereas 33% of female respondents supported it. In the case of Korea, 45% (16% "strongly support" + 29% "tend to support") of 1,008 respondents supported it, while 28% (9% "strongly oppose" + 19% "tend to oppose") opposed it. And net Support rate was 17%. 55% of male respondents supported nuclear energy, whereas 36% of female respondents supported it. Among all surveyed countries, China and Russia exhibited the highest support for nuclear energy, with support rates of 61%, respectively. The survey also examined regional variations and other demographic factors influencing public support for nuclear energy.

Table 1 presents an analysis of public perception surveys on nuclear energy conducted in this study. All institutions surveyed at least 1,000 respondents per country. All three institutions conducted surveys about respondent characteristics detail on gender, age, region, and knowledge level about nuclear energy. NEI additionally conducted a survey on political inclination and education level. And Radiant Energy Group additionally surveyed 4 items including interest in climate change. The support rates for nuclear energy were 77% for NEI, 80.8% for KEIA, 46% for Radiant Energy Group. The support rates for United States and Korea surveyed by Radiant Energy Group were 46% and 45%, respectively. Due to differences in survey methodologies across institutions, direct comparisons may be challenging. However, the preference for nuclear energy in Korea appears to be similar to the global average. Additionally, findings indicate that higher levels of nuclear knowledge correlate with greater support for nuclear energy. In general, male respondents exhibited a stronger preference for nuclear energy compared to female respondents. KEIA and Radiant Energy Group surveyed the ranking of energy attributes. KEIA showed eco-friendliness, energy security, and economics in that order. Radiant Energy Group showed reliability, health & safety, and climate change in that order (global). In addition, KEIA conducted a survey reflecting the current characteristics of Korea, such as questions related to high-level radioactive waste disposal sites and opposition to the construction of nuclear power plants in residential areas. Radiant Energy Group surveyed not only nuclear energy but also other renewable energies and conducted a comparative analysis with nuclear energy.

Table 1: Analysis of public perception surveys on nuclear energy

| Division                  |                 | NEI                                       | KEIA   | Radiant Energy Group                         |
|---------------------------|-----------------|---|--|--|
| Country                   |                 | United States                             | Korea  | Global (20 countries)                        |
| Respondents               | Counts          | 1,000                                     | 1,000  | 20,122 (USA 1,005) (Korea 1,008)             |
|                           | Characteristics | 6 including gender, age, etc.             | 4 including gender, age, etc.                | 10 including gender, age, etc.               |
| Nuclear support           | support         | 77% (Total)<br>86% (Male)<br>70% (Female) | 80.8% (Total)                                | 46% (Total)                                  |
|                           | Oppose          | 23%                                       | 16.7%  | 28%  |
|                           | Net             | 54%                                       | 63.3%  | 18%  |
| Energy attributes (Top 3) |                 | -   | eco-friendliness, energy security, economics | reliability, health & safety, climate change |

#### 4. Conclusion

This study analyzes public perception surveys on nuclear power. To achieve this, surveys conducted by the NEI, KEIA, and Radiant Energy Group on public perceptions of nuclear energy were examined and analyzed. Each institution conducted a survey of more than 1,000 respondents and characteristic detail such as gender, age, and region. The support rate for nuclear energy was different, but it can be considered to be at a similar level to the international average. It is difficult to make a direct comparison because each survey method is different. When analyzing Korean nuclear energy awareness, the characteristics of respondents surveyed by each institution and the analysis method can be utilized. The results of this study can be utilized in research on improving nuclear energy awareness.

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#### REFERENCES

- [1] Radiant Energy Group, Public Attitudes toward Clean Energy, Nuclear Energy, 2023.