Compensation to Local Residents: Unexpected Survey Results from the Public Deliberation on Shin-Gori Nuclear Reactors No. 5 & 6

Chul Min Kim and Man-Sung Yim*
Korea Advanced Institute of Science and Technology, 291 Daehak-ro, Yuseong-gu, Daejeon
**Corresponding author: msyim@kaist.ac.kr*

1. Introduction

President Moon, Jae-In declared the public debate for the construction of Shin-Gori nuclear reactors no. 5 & 6 in the ceremony marking the shutdown of Kori 1, on June 19, 2017. Two weeks later the construction of Shin-Gori 5,6 were suspended and the three-month process of public deliberation were conducted from July 24 to October 20, 2017. Four surveys have been conducted during the process.

This paper analyzed the result of final (fourth) survey and found that, one of the significant responses among the respondents was "the government should care the health and migration of the local residents". It is totally unexpected since it was not the major issue in the public deliberation process.

Also, this study found the evidence of the unexpected results described above, from the final presentation of the cancellation side ("Citizen Movement to Cancel Construction of Shin-Gori Nuclear Reactors No. 5 & 6 for a Safe World"). From these findings, this study concludes that the respondents were deeply influenced by recency bias during the final survey.

2. Methods

2.1 The Public Deliberation on Shin-Gori 5 & 6

The Public Deliberation Committee on Shin-Gori Nuclear Reactors No. 5 & 6 conducted participatory surveys from July 24 to October 20, 2017, over a roughly three-month process of public deliberation aimed at reaching a societal consensus on whether construction should be suspended on the fifth and sixth reactors at the Shin-Gori Nuclear Power Complex.

As part of the consultations, 471 people were selected for a participatory deliberation group that engaged in a month-long critical deliberation program, based on which the group members provided our committee with intelligent and judicious responses. The final survey findings showed 59.5% of respondents supporting resumption of construction, 19.0%p higher than the 40.5% supporting a permanent suspension. [1]

2.2 Preferred Follow-up Measures after Public Deliberation

To analyze the participants' preference for nuclear policy after the public deliberation process, question 9-1 and 10-1, the only subjective item in the survey, was used. Q9, Q9-1, Q10, Q10-1 are shown as below [1]

Q9. Some say if construction is discontinued, follow-up measures will be necessary. Which of the following do you believe are the most important follow-up measures? (Identify a first choice and second choice).

First choice_____ Second choice_____

Measures
① Human resource development should be supported to ensure safe operation of existing plants.
② Continuous efforts must be made to promote nuclear exports.
③ Investments should be made in developing and maintaining nuclear technology.
④ Measures should be taken to enhance the morale of professionals in the nuclear industry.

Q9-1. If construction is discontinued, what other measures do you think are needed in addition to those mentioned above? Please write down the measures you think are needed.

Fig. 1. Question 9 and 9-1 of the survey.

Q10. Some say if construction is resumed, follow-up measures will be necessary. Which of the following do you believe are the most important follow-up measures? (Identify a first choice and second choice).

First choice_____ Second choice_____

Measures
① The government must further strengthen nuclear safety measures.
② The nuclear-free policy must be maintained.
③ The government must promptly prepare a plan to resolve the spent fuel issue.
④ More investments should be made to increase the share of renewable energy in the energy mix.

Q10-1. If construction is resumed, what other measures do you think are needed in addition to those mentioned above? Please write down the measures you think are needed.

Fig. 2. Question 10 of the survey

2.3 Word Analysis

In order to perform the word analysis on the responses, they were summarized to a combination of keywords. Of course, morphological analysis can also be performed using Korean Natural Language Processing (KoNLP). However in Korean sentences, there are many cases where the subject is not mentioned directly ("Enhance safety", "Continuous promotion of both sides", "Human resource training", etc.). Therefore, in this study, the answers to the questionnaires were replaced by the target keywords such as "expansion of renewables" and "extermination of nuclear corruption". For example, the response "Renewable energy development, securing the safety of existing nuclear power plants" was replaced into two keywords, "Renewable technology development" and "nuclear safety management".

Using keyword sets, the frequency analysis was performed. The keywords are categorized into 6 main categories (renewables, nuclear power, electricity

supply, local (residents, companies, land), policy/communication and others) and 86 subcategories.

3. Results

3.1 Keyword Frequency Analysis

The following table shows the descriptive statistics. Among 471 respondents, 330 responded to both questions, while 72 did not respond.

Table II: Descriptive Statistics of Q9-1 and Q10-1

	Total	Voted to resume	Voted to discontinue
No response	72	51	21
Respond only "if resume"	38	27	11
Respond only "if discontinue"	31	13	18
Responded to both questions	330	184	146
Total	471	275	196

Table III shows the result of keyword frequency analysis. As expected, the number of responses related to renewables and nuclear power are dominant. Nevertheless, keywords related to local residents ranked third. This is a very unusual result, with seven of the eight options in Q9 and Q10 being about nuclear power, and one about investment in renewable energy. This was not even a major issue during the public deliberation process.

Table III: Results of Keyword Frequency Analysis

	Total	If resumed	If discontinued
Renewables	268	116	152
Nuclear power	485	276	209
Electricity supply	123	35	88
Local(residents, companies, land)	189	70	119
Policy, Communication	158	112	46
Others	16	9	7

3.2 Compensation to Local Residents

Additional analysis has been performed for local residents. First, Table IV shows the frequency of keywords related to local residents.

Table IV: Keywords Related to Local Residents

If resumed	**70**	**If discontinued**	**119**
Local residents' safety measures	39	Compensation to local residents	71
Compensation to local residents	19	Compensation to local companies	26
Strengthen benefit for local residents	10	Support local industry	9
Measures against damage by high voltage power line	2	Minimize burial costs	7
		Land utilization plan	6

Respondents demanded government to utilize the safety measures for local residents. Also, some called for the compensation to local residents, since nuclear power plant cause the health damage and some of the residents should migrate to other place.

4. Discussion

Why were there so many responses related to local residents, which demanded compensation for residents' migration and health damage?

The issue of immigration and compensation of the local residents was rarely addressed in the materials distributed for the preliminary learning, video lecture materials, comprehensive debates, and the first and second debate presentations. It is only mentioned for about 5 seconds by the narration of one sentence only in the sixth lecture of online lecture video of the citizen participant of construction stop side. The lecture was open to citizen participation groups on October 7, 8 days before the final survey.

Participants may have been interested in migration and damage compensation of local residents. However, there was no mention of the issue of compensation for the relocation of residents or other damage in the question on the first, second, and third presentations and discussions during the general forum.

In this study, we found clues about this in the video of the presentation held just before the fourth survey. It was not officially disclosed, but because the first presenter, Lee Yu-Jin, released it on Facebook streaming [2], we could find clues using the video.

In this presentation, local residents' migration and compensation requests were mentioned. The whole contents are as follows:

"원전에서 나오는 전기는 눈물을 타고 흘러온다고 합니다. 원전이 건설되면 지역주민들의 삶은 망가지고 위험해집니다. 주민들은 원전에 예속된 삶을 살 수밖에 없습니다. 삼중수소에 오염된 월성원전의 주민들은 이주를 요구하며 몇 년째 천막 농성 중입니다. 아무런 대답도 없습니다.

또 원전도 공장인 이상 현장에서 일하는 노동자가 필요합니다. 헌데 위험한 피폭노동은 모두

하청노동자들의 몫입니다. 어느 누가 자기 생명을 해치는 피폭노동을 원하겠습니까? 그거라도 하지 않으면 당장 먹고 살 수 없는, 이 땅에 가장 가난하고 힘없는 사람들이 피폭노동을 할 수밖에 없는 것입니다. 원전의 전기를 대도시로 보내기 위한 송전탑 건설로 많은 사람들의 삶이 파괴되는 것을 우리는 이미 보아왔습니다. 밀양과 청도의 주민들이 대표적인 예입니다.

우리의 편익을 위해서 누군가의 희생을 강요해서는 안 됩니다. 이것은 상식적인 윤리입니다. 그런데도 누군가의 희생을 요구할 수밖에 없는 원전의 현실을 애써 외면하는 것은 비윤리적인 태도입니다. 언제 내가 희생자가 될 지 모릅니다."

(English translation: "Electricity from the nuclear power plant is said to flow through tears. When nuclear power plants are built, the lives of local residents are ruined and in danger. Residents have no choice but to live a life subservient to nuclear power plants. Residents of Wolseong NPP contaminated with tritium have been demanding migration and have been holding tents for several years. There is no answer.

We also need workers who work at nuclear plants and plants. However, all hazardous work is the responsibility of subcontracted workers. Who would want to be exposed to life that hurts their lives? If you do not do it, the poorest and hardest people in the land, who cannot afford to eat right now, should do radiation-exposed labor. We have already seen the destruction of many people's lives by constructing a transmission tower to send electricity from a nuclear power plant to large cities. The residents of Miryang and Cheongdo are representative examples.

We should not force anyone to sacrifice for our benefit. This is common sense ethics. Still, it is unethical to ignore the reality of nuclear power that can only be demanded of someone's sacrifice. We do not know when we will be victims.")

5. Conclusion

The reason for the sudden increase in the number of respondents demanding compensation for damage to the local residents in the final survey is presumably due to the recency bias. It could be a common phenomenon in all the processes of public debate. If the most up-to-date information contains unconfirmed claims, the survey result can be biased, even though all other public deliberation process was unbiased. Therefore, in the future public opinion, the design to avoid the latest bias among various cognitive bias must be reflected.

ACKNOWLEDGMENT

This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Science, ICT & Future Planning (No. NRF-2016R1A5A1013919).

REFERENCES

[1] J. Kim et al., Results of Participatory Surveys for Public Deliberation on Shin-Gori Nuclear Reactors No. 5 & 6, The Public Deliberation Committee on Shin-Gori Nuclear Reactors No. 5 & 6, October 20, 2017.
[2] Yu-Jin Lee (Facebook Video), https://www.facebook.com/nonukesyj/videos/10214316431808381/