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Public Deliberation in Korean Society: Where It Stands and Should Head toward

- Evaluating Public Deliberation Cases on Shin-Kori Nuclear Power Plants Units 5 & 6 and College Admissions System Reform

Soo Kyeong Hwang, Senior Fellow at KDI

“Public deliberation has demonstrated its potential as a conflict resolution mechanism through deliberative discourses on Shin-Kori nuclear power plant units 5 and 6 and the college admissions reform. However, these deliberative processes revealed some flaws in representativeness, inclusiveness, and the derivation of social consensus building through deliberation. In light of growing efforts to incorporate it into public decision-making, there is also an increasing need for proficiencies in systematic planning, support, and oversight.”

I. Public Deliberation: A New Conflict Resolution Mechanism

In the early days of the Moon Jae-in administration, public deliberation on Shin-Kori Nuclear Power Plant (NPP) Units 5 and 6 demonstrated that the deliberative process could serve as a new mechanism for conflict resolution. Afterward, multiple attempts followed suit to settle long-running issues at both central and local government levels: public debate on the reform of the college admissions system for the 2022 school year by the Ministry of Education (2018), civil proposals on public policy by the National Climate and Environmental Council (2018), participatory budgeting by the Ministry of Economy and Finance (2018), deliberative polling on Jeju Greenland International Medical Center (2018), public deliberation on Daejeon Wolpyeong Park (2018), public discussion on regionally balanced development by Seoul (2018), and provincial policy by Gyeonggi-do (2019, 2020).

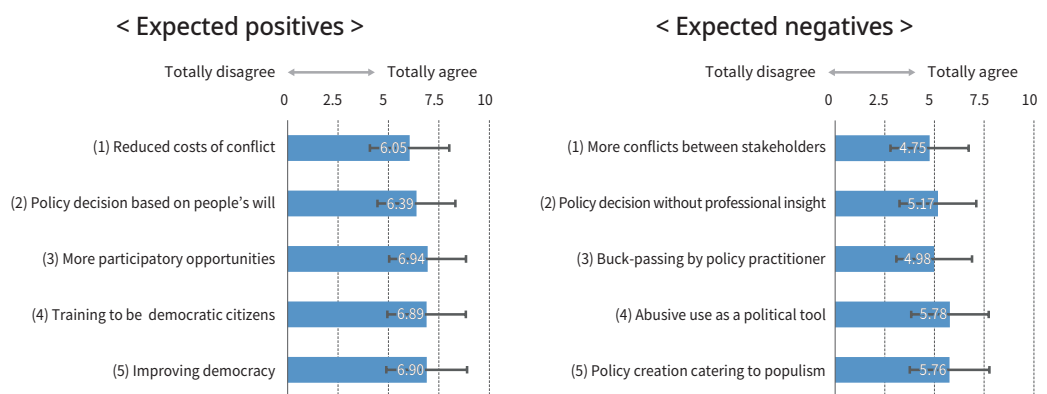
Public deliberation on Shin-Kori NPP (units 5 and 6) in 2017 showed its potential as a new mechanism for conflict resolution.

In a public survey on the wide use of public deliberation, 75.9% are satisfied while a mere 4.7% remain worried, but still, there are both expectations and concerns.

However, the growing popularity of public deliberation has received mixed responses. Some welcome it as progress in democracy with broader participation of ordinary citizens, and others worry about the possibility of misuse as a tool to manipulate public opinions or as an excuse to shift the responsibility of policymakers to the general public.

The Korea Development Institute (KDI) conducted the *Opinion Survey on Public Conflicts, Public Deliberation, and Citizen Participation* to find out how the Korean people perceive public deliberation as of 2020.¹⁾ As to the survey question on the new approach's growing popularity since the Shin-Kori NPP debate, 75.9% of the respondents replied that such phenomenon is very desirable or slightly desirable, while only 4.7% answered negatively (slightly or very undesirable), indicating positive reception by most Koreans. In addition, the survey asked the degree to which respondents agree with the pros and cons of public deliberation on a scale of one to ten. As average scores ranged between 6.1~6.9 on expected benefits and 4.8~5.8 on drawbacks, the results find that the people are leaning toward the gains.

[Figure 1] Public's Attitude towards Pros and Cons of Public Deliberation: Expected Positives vs. Expected Negatives



Note: Answers were measured on a scale of 1 to 10 (median is 5). Error bars represent standard deviation.

Source: KDI, "Opinion Survey on Public Conflicts, Public Deliberation, and Citizen Participation," 2020.

Discussions on the pros and cons of public deliberation need to be based on objective evaluations of respective cases.

Nevertheless, the author believes that the positives and negatives should be looked at through objective evaluation of individual cases rather than from a fundamental perspective. This study uses the public deliberation survey data on Shin-Kori NPP Units 5 and 6 in 2017 and college admissions system reform in 2018 to empirically analyze how well these two cases achieved the intended goals of the deliberative process. It further identifies conditions to properly function as an instrument to solve complex social problems with vying interests.

II. Analysis Framework for Public Deliberation

1. Public deliberation and deliberative democracy

Public deliberation embodies deliberative democracy in essence. As a system designed to make up for the shortcomings of representative democracy where collective decision-making

1) This survey was conducted by Embrain commissioned by KDI in the form of a web survey from September 25 to October 13, 2020, targeting 5,000 adults aged 19~69 nationwide.

is delegated exclusively to representatives, this term refers to a democratic ideal that seeks to reflect people's will in public decisions by way of deliberation of free and equal citizens. It differs from simple participatory democracy in that decisions are made based on public opinion resulting from informed discussion instead of depending on which view is most supported.

Simply put, deliberative democracy is an alternative or complementary system to representative democracy, the cornerstone of modern democratic states. In the regime, participation and deliberation are mechanisms for the justification of decisions rendered by citizens and their representatives. As for Korean society, it is a practicable process that uses various experiences and concepts developed to realize its ideals.

However, no matter how appealing it may be in a theoretical sense, deliberative democracy cannot escape judgment once carried out in the real world. That is to say, public deliberation merits objective assessment and evaluation of actual cases about adherence to the purpose of deliberative democracy in their design and operation.

2. Analysis framework: Assessment elements of planning, participation, and deliberation

Public deliberation can be evaluated in three aspects: planning, participation, and deliberation²⁾. <Table 1> shows analytic issues and evaluation elements reconstructed from existing debates over public deliberation. This study introduces the results of empirical analysis, mainly focusing on participation and deliberation, and also presents problems with planning while providing interpretations of the analysis results.

<Table 1> Analysis Framework for Public Deliberation

Framework	Element	Evaluation details
Planning	Agenda setting	- Selected agendas are appropriate in light of the nature of the case.
	Bindingness	- The role of public deliberation is clearly defined, and results will be reflected in the process of policy decisions.
	Neutrality/Autonomy	- Neutrality and autonomy of public deliberation are guaranteed.
Participation	Representativeness	- Participants are eligible representatives, including stakeholders.
	Inclusiveness/ Diversity	- Various perspectives and viewpoints are presented without any prejudice.
Deliberation	Information/Leaning	- It provides sufficient information and learning resources regarding the agenda.
	Fairness	- Participants are guaranteed equal opportunity of speech.
	Reflectiveness	- Discussions are based on facts and logical arguments and decisions on rational judgment. - Opinion sharing and consensus building are based on mutual respect. - Perspectives of publicness and social responsibility are secured.

Source: Hwang et al. (2020), p.43.

Deliberative democracy is a complementary system to representative democracy, and unlike participatory democracy, it undertakes a debate process to check on public opinions and attempts to make decisions based on the confirmed opinion.

Deliberative democracy gives legitimacy to the decision made by ordinary citizens and their representatives through participation and deliberation.

Public deliberation can be assessed and evaluated under three frameworks of planning, participation, and deliberation.

2) In general, there are four steps to public deliberation: preliminary preparation → process design → participation and deliberation → conclusion. The first two steps form the planning phase as matters on agendas setting, design, and goals are decided. The last step of drawing a conclusion falls under the deliberative process in a broad sense.

III. Assessing Participation

Citizen participants must be able to fully represent and include the general public who will be affected by their collective decisions and policies.

Participants in public deliberation should represent and include the general public who will be affected by their collective decisions and resultant policies (representativeness/inclusiveness) since deliberation outcomes need to be suited for inferring the general public's position on the same issues in a similar situation.

A proportional extraction of population is not enough to fully ensure the representativeness of deliberative discourses (principle of inclusiveness).

Inferring the population from a civic participation group sample is not valid without achieving representativeness. James S. Fishkin, who devised a deliberative process in the format of deliberative polling, specified that the composition of participants must satisfy three criteria: (1) demographic representativeness, (2) attitudinal representativeness on conflicting policy issues, and (3) adequate sample size. In line with these criteria, random sampling that reflects population composition and opinion distribution has become commonplace in selecting participants for public debate.

Nevertheless, simulating the general population in proportion alone does not guarantee the discourse's representativeness. Take, for example, the human rights of minority groups. Would it be sufficient to represent their rights by solely relying on discussions done in a small group matching the demographic proportion? Demographic proportion in this sense is practically the same as an uneven playing field. Another criterion is explicitly required and used to remedy this drawback: inclusiveness. Per inclusiveness, it is more fitting to over-sample groups that are minor or generally less represented in participation composition.³⁾ In short, inclusiveness is supplementary to representativeness for genuine public deliberation.

1. Representativeness

Preliminary public surveys and deliberation groups showed a statistically meaningful difference regarding conflicting policy issues.

As for participation, this study looks into whether the makeup of citizen participation groups in the deliberation processes satisfied the standard of representativeness. Public deliberation on Shin-Kori NPP and the college admissions system reform had clear-cut criteria to consider in organizing the group of participants, including demographic features such as region, gender, and age, together with an element of views on conflicting issues. In those cases, the demographic representativeness of preliminary national surveys and deliberation groups is not statistically different from the general population as to gender, age, and region.⁴⁾

Yet, views on the conflicting issues showed a statistically significant difference between preliminary public surveys and participation groups (Table 2). For Shin-Kori NPP, (1) no meaningful difference was observed between the two on whether to suspend or resume construction, but the analysis found (2) a statistical difference at a 1% significant level in views on the direction of nuclear energy policy. To be more specific, citizens leaning against nuclear power were somewhat overrepresented.

3) Over-sampling here can be seen as a device similar to active action in social policy.

4) The population here is assumed to be the mid-year resident population aged 19+ in 2017 and 2018, respectively (Hwang *et al.*, 2020, pp.61-62).

<Table 2> Opinion Distribution (%) on Conflicting Issues: Preliminary National Surveys vs. Public Deliberation Groups

(Unit: %)

< Shin-Kori NPP >		
Response	National survey respondents	Public deliberation participants
(1) Suspend or resume?		
Suspend	27.60	29.09
Resume	36.62	36.73
Decision deferred ¹⁾	35.77	34.18
χ^2	0.7107	
(2) Future policy direction		
Expand	12.92	14.01
No change	31.05	31.63
Reduce	39.23	47.35
Not sure	16.80	7.01
χ^2	35.286**	
Size of samples	20,006	471

< College admissions system reform >		
Response	National survey respondents	Public deliberation participants
(1) Which process should be more emphasized?		
School records	39.26	44.49
CSAT	43.74	42.86
No opinion	17.00	12.65
χ^2	8.947*	
(2) Which pathway should be expanded for the 2022 school year?		
School records	31.48	31.02
No change	13.85	18.57
CSAT	42.04	41.84
Not sure	12.64	8.57
χ^2	14.341**	
Size of samples	20,000	490

Note: * and ** indicate the chi-square (χ^2) results and the significance at 5% and 1% levels, respectively. Also, CSAT stands for College Scholastic Ability Test.

Source: Raw data from citizen participation surveys for public deliberation on Shin-Kori NPP Units 5 and 6 and the 2022 college admissions reform

Public deliberation on the college admissions system reform presents a similar situation. Survey respondents and civic participants had statistically significant differences on (1) prioritizing admission pathways and (2) expanding admission pathways for the 2022 college admissions cycle. In general, the results show overrepresented viewpoints for school records and transcripts or at least the continuance of the current system.

2. Inclusiveness

Next, this study turns to inclusiveness. Only for those who expressed intent to participate in the preliminary survey, a civic participation group was formed based on gender, age, views on policy issues, and more, using stratified sampling. To put it differently, citizens who replied not to join the group were counted out at the outset. This approach of precluding those without intent to participate or passive in the deliberative processes needs further analysis of the impacts on discursive formation in deliberation groups. In this study, the political orientation of respondents is an indicator to check inclusiveness in discursive formation.

<Table 3> reports the distribution of supporting parties among three groups—preliminary survey respondents, willful respondents, and deliberation participants—coupled with chi-square test results based on distribution observed in the preliminary surveys. On both topics, the share of support to each political party varies across different groups. It is notable that progressive political parties, like Democratic Party and Justice Party, receive higher support from willful respondents and deliberation participants.

In terms of the composition of citizen participants, supporters of nuclear phaseout in the Shin-Kori case and those prioritizing school records in the college admissions case were overrepresented.

Among preliminary survey respondents who had expressed their willingness to participate in public deliberation, citizen participation groups were selected using the stratified extraction method.

<Table 3> Support to Political Parties among Willful Respondents and Deliberation Participants

(Unit: %)

< Shin-Kori NPP >				< College admissions system reform >			
Supporting party	National survey respondents	Willful respondents	Public deliberation participants	Supporting party	National survey respondents	Willful respondents	Public deliberation participants
Democratic Party	39.62	43.35	46.07	Democratic party	44.51	47.81	50.20
People Power Party	8.94	10.46	10.40	People Power Party	7.51	6.53	5.71
The People Party	3.70	4.08	2.97	The People Party	2.77	2.91	4.49
Bareun Party	3.48	3.72	3.61	Bareun Party	0.39	0.36	0.41
Justice Party	3.03	3.64	4.25	Justice Party	6.07	6.65	8.98
Other parties	0.78	1.02	0.85	Other parties	0.78	1.01	1.43
None	37.20	31.91	30.79	None	31.58	29.64	26.53
Unanswered	3.23	1.82	1.06	Unanswered	6.42	5.09	2.24
χ^2	-	131.11**	21.169**	χ^2	-	59.649**	37.646**
Size of samples	20,006	5,882	471	Size of samples	20,000	6,636	490

Note: ** indicates the chi-square (χ^2) results based on the distribution observed in the preliminary survey and the significance at 1% level.

Source: Raw data from citizen participation surveys for public deliberation on Shin-Kori NPP Units 5 and 6 and the 2022 college admissions reform

Politically apathetic or conservative citizens tend to be systematically less willing to participate in public deliberation.

By the criteria of inclusiveness, the final sampling of participants was biased towards amplifying the shortcomings of representativeness.

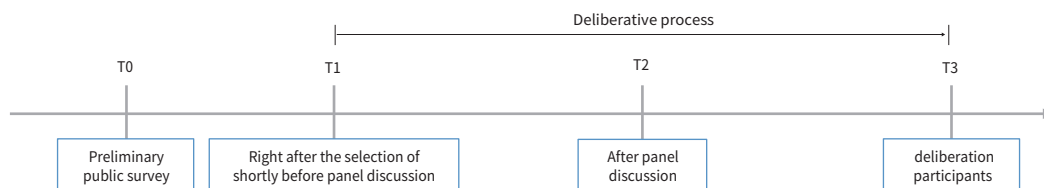
Since it is deducible that those with political apathy or conservative tendencies would be less willing to participate in the public deliberation, the difference between preliminary survey respondents and willful participants was predictable. However, as the gap with the participation group widens, the final sampling of deliberation groups may have amplified the lack of representativeness rather than making up for it. Given most public deliberation agendas are political, political bias within the citizen participation groups may hurt the inclusiveness of public discourse, and this requires more careful consideration.

IV. Analysis of Deliberation Effect

There are three elements of evaluation for deliberation: (1) information sharing and facilitated learning for participants, (2) ensuring fairness in the deliberative process, and (3) reflective deliberation. This section examines the impact of deliberation, focusing on the first and third elements above.

Because the deliberation effects are sensitive to dynamic characteristics emerging throughout the deliberative process, its analysis requires personal data to capture such changes. Each public deliberation had four rounds of surveys (Figure 2), and the study compiled each survey in the format of individual panel data for analysis. Only individuals who responded to all three citizen participation surveys were analyzed, and the sizes of samples are 471 persons for Shin-Kori NPP and 490 persons for the admissions reform.

[Figure 2] Deliberative Process and Citizen Participation Survey



1. Public Deliberation on Shin-Kori NPP Units 5 and 6

The fundamental premise for reflective deliberation is that participants can make rational decisions with enhanced understanding after obtaining sufficient information on the concerned issue.

This study looks into the participation of deliberation groups in online learning sessions and knowledge quiz results to check for the premise. Six lessons were provided by the public deliberation committee, with an average attendance rate of 92%. As opposed to only 2.8 of an average number of correct answers in the eight-questions quiz of the first survey, the average increased in the subsequent knowledge checks to 4.8 (2nd survey) and 6.0 (3rd survey), indicating an improved understanding of the matter.

Next, it examined whether the deliberative process helped participants make rational decisions and form opinions. Three rounds of citizen participation surveys inquired about viewpoints on suspending or resuming the construction of Shin-Kori NPP units 5 and 6 and the importance of the following factors in their decision-making. The factors given for consideration were 1) safety, 2) stable supply of energy, 3) economic feasibility of power supply, 4) regional and national industries, 5) electricity fees, and 6) environment.

<Table 4> presents the results of analyzing correlations between viewpoints of suspension(1)/resumption(0) (excluding decisions deferred) and the importance weight of each factor. Such decisions correlate very highly with all six factors. To elaborate further, participants weighing more heavily on safety and environment tend to lean toward suspension of the construction. With more weight on other factors, the tendency is to support its resumption. That is a rational pattern of decision-making, given the above factors from 2) to 5) concern economy and industries.

The deliberation group for Shin-Kori NPP Units 5 and 6 got more and more right answers in knowledge quizzes with each survey.

Valuing safety and the environment tipped the scales toward construction suspension, and stressing economic and industrial aspects tilted it to resumption.

<Table 4> Shin-Kori: Pearson's Correlation Coefficient between Suspend/Resume Decision and Importance of Each Factor

	1st Survey Suspend vs. Resume	2rd Survey Suspend vs. Resume	3rd Survey Suspend vs. Resume
1) Safety	0.139 *	0.160 **	0.179 **
2) Stable energy supply	-0.399 **	-0.463 **	-0.422 **
3) Economic feasibility of power supply	-0.499 **	-0.474 **	-0.441 **
4) Regional and national industries	-0.441 **	-0.312 **	-0.249 **
5) Electricity fee	-0.438 **	-0.398 **	-0.348 **
6) Environment	0.190 **	0.215 **	0.155 **
NOB	310	362	456

Note: ** and * denote significance levels at 1% and 5%, respectively.

Source: Raw data from citizen participation surveys for public deliberation on Shin-Kori Nuclear NPP Units 5 and 6

A shift in preference among debate participants most strongly demonstrates reflective deliberation.

Shifting preferences is the strongest manifestation of reflective deliberation Preference shift is a notion that captures opinion formation or change of initial viewpoint through active information exchange and discursive discussions in the process of deliberation. Preference shifts in the two deliberations are analyzed and summarized in <Table 5>.

<Table 5> Shin-Kori: Opinion Change (T0 → T3) and Pattern of Preference Shift

(1) Shin-Kori NPP Units 5 and 6					(2) Future direction of nuclear energy policy					
T0 \ T3	Suspend	Resume	Undecided	Total	T0 \ T3	Reduce	Status quo	Expand	No opinion	Total
Suspend	108	23	6	137	Reduce	178	39	4	2	223
Resume	10	161	2	173	Status quo	56	75	17	1	149
Undecided	73	81	7	161	Expand	8	32	23	3	66
Total	191	265	15	471	No opinion	14	16	2	1	33
					Total	256	162	46	7	471

(3) Pattern of shifts in preferences

Pattern	(1) Shin-Kori NPP Units 5 and 6		(2) Future direction of nuclear energy policy	
	Frequency (number of people)	Proportion (%)	Frequency (number of people)	Proportion (%)
Status quo	276	58.6	277	58.8
Shift	195	41.4	194	41.2
Undecided → Decided	154	32.7	32	6.8
Opinion change	33	7.0	156	33.1
Decided → Undecided	8	1.7	6	1.3
Total	471	100.0	471	100.0

Source: Raw data from citizen participation surveys for public deliberation on Shin-Kori NPP Units 5 and 6

In the deliberative process, 32.7% formed opinions, 7.0% changed viewpoints, and 58.6% maintained initial positions.

After public deliberation, the Shin-Kori NPP construction transformed from a contest between 29% for suspension vs. 37% for resumption to a debate between 41% vs. 56%.

Throughout the deliberation on Shin-Kori nuclear reactors construction, 32.7% of the participants formed clear views, 7.0% switched positions, 1.7% withdrew initial opinions, and 58.6% maintained viewpoints after deliberation. On policy direction for nuclear energy, the share of unchanged opinions was similar to the previous one, whereas opinion shifts panned out differently. Only 6.8% formed a view, and 33.1% switched positions. This result shows the deliberative process' potential to contribute to opinion changes.

Assuming representativeness in the deliberation, intuitive interpretations of the analysis results are as follows. Before the open debate, the NPP construction was, in essence, a contest between 29% for suspension against 37% for resumption, with the remaining 34% feeling estranged from the topic. Afterward, however, most onlookers formed opinions on the issue and reconstructed its composition as 41% versus 56%. Even though the consensus remained contested among citizens, decision-making became easier for delegated authorities to choose one of the two.

Lastly, the study conducted a logit analysis using preference shift as a dependent variable to determine which factors affected the shift. <Table 6> shows the estimation results of knowledge state and gain variables. Interestingly, the higher the knowledge level, the less likely participants are to change their viewpoints; however, if knowledge accumulates (i.e., increasing the level of understanding), preference shift is more likely to occur. Such results support that preference shift is more probable when understanding level improves through the deliberative process.

Knowledge gain functioning as the primary driver of preference shifts supports that such changes are more likely when the level of understanding improves.

<Table 6> Shin-Kori: Logit Model of Preference Shift Determinants

Variables		(1) Preference shift on Shin-Kori NPP Units 5 and 6		(2) Preference shift on future direction of nuclear energy policy	
Knowledge	Knowledge level	-0.306	(0.077) **	-0.131	(0.074) +
	Knowledge gain (1st~3rd surveys)	0.198	(0.064) **	-0.024	(0.061)
-2 Log L		638.95		638.24	

Note: 1) Dummies for gender, age, region, and supporting parties are included in all models.

2) Knowledge level is expressed as how many answers participants got right in knowledge quiz, and knowledge gain as the change in the number of correct answers between 1st~3rd surveys.

3) ** and + denote significance (N=471) at 1% and 10% levels, respectively.

Source: Raw data from citizen participation surveys for public deliberation on Shin-Kori NPP Units 5 and 6

Summing up earlier analyses, the Shin-Kori public deliberation evaluation may recognize the formation and adjustment of individual opinions (shifting preferences among participants), which led to socially preferred decision-making.

2. Public Deliberation on 2022 College Admissions Reform

Analogous to the Shin-Kori case, this study analyzes the deliberative process of the college admissions system reform, looking into understanding levels of the issue, evidence-based opinion formation, and features of preference shift.

Concerning the level of understanding of the reform, more than 97% of the deliberation group completed online lectures, which is higher than 92% in Shin-Kori. The average number of correct answers in nine-question knowledge checks in three surveys increased from 4.4 (1st) and 5.8 (2nd) to 6.7 (3rd), showing knowledge gain in the process.

In this case, inquiries given to participants include approval ratings on four key agendas and importance ratings on eight opinion bases (Table 7). Accordingly, assessing whether the deliberation induced rational decision-making requires examining how individual agenda choices and opinion bases are correlated.

In the college admissions reform deliberation, the completion rate of online lectures by debate participants surpassed 97%, and the number of correct answers to knowledge questions gradually increased over time throughout the deliberative process.

<Table 7> College Admissions Reform: Changes in the Degree of Support to Four Agendas and Opinion Bases

(1) Support to key agendas				(2) Opinion bases			
Key agendas	1st	2nd	3rd	Basis for Opinion	1st	2nd	3rd
1. Higher priority on CSAT	3.30	3.47	3.40	1) Secure objectivity in the selection process	4.46	4.38	4.43
2. Higher priority on school records	3.30	3.07	3.27	2) Aim at normalizing school education	4.40	4.34	4.50
3. More quota for early admission	3.10	2.92	2.99	3) Offer another change to apply for college admission	3.86	3.90	3.99
4. Higher priority on CSAT+school records	3.32	3.35	3.14	4) Reduce the gap between regions, social classes, and school types	4.08	4.09	4.21
				5) Guarantee universities autonomy in student selection	3.46	3.35	3.44
				6) Reduce the burden of private education expenses	4.32	4.28	4.05
				7) Ease the burden on students from the exams	4.04	4.06	4.13
				8) Maintain the stability of college admissions system	4.20	4.18	4.08

Source: Raw data from citizen participation surveys for public deliberation on the 2022 college admissions reform

A factor analysis narrowed down eight opinion bases into two perspectives:

- ① fair opportunities in education and
- ② efficiency of the education system.

The tendencies became clear to favor Agenda 1 and 4 as more supportive of fair opportunities in education and Agenda 2 and 3 with a higher value on efficiency and safety of the overall education system

To simplify the complex correlation structure, this study uses factor analysis that assumes a common variable (meta issue) underlying and systematically related to the eight opinion bases. The factor analysis of importance ratings on those opinion bases of the first survey revealed two common factors (Factors 1 and 2). Highly correlated opinion bases offer some insights summed up as follows: Factor 1 (fair opportunities in education) stresses the need to reduce the impact of an uneven playing field in college admissions; Factor 2 (efficiency of the education system) concerns the overall effectiveness and stability of the education system, including the selection process, school education, and college admissions system.

It further examines how extracted two factors have affected the approval ratings of four key agendas.⁵⁾ The results show that the more supportive of fair opportunities in education (Factor 1), the more likely to approve Agenda 1 and 4, and the more supportive of the systemic effectiveness (Factor 2), the more likely to approve Agenda 2 and 3. Such tendencies became increasingly apparent during three surveys, suggesting that their inclination to make consistent and rational decisions based on objective evidence strengthened throughout the deliberation.

Preference shifts observed in this case were also analyzed, presenting the results in <Table 8>. It is 66.5% (prioritized admission) when grouped into two—prioritizing school records and transcripts and orienting toward the College Scholastic Ability Test (CSAT)— and 63.9%

5) For estimation results of the ordinal logit model using the two factors as explanatory variables, see <Table 4-22>, p.92, in Hwang *et al.*, (2020).

(expanding admission) with three categories, adding status quo maintenance to the two. More than half changed their viewpoints (263 and 270 in prioritized admission and expanding admission each out of 490), and the frequency of opinion formation (without opinion → with opinion) was 62 and 42, respectively. Only about a third maintained their initial position.

<Table 9> reports the knowledge effect observed in preference shift. Both configurations show that only when participants gained knowledge meaningfully increased the shifting odds. This finding indicates that information and knowledge gained in the deliberative process considerably impacted participants in the final decision-making.

In the college admissions deliberation, two-thirds of participants experienced a shift in preference.

The college admissions reform case also shows that knowledge gain increased the probability of preference shift.

<Table 8> College Admissions Reform: Opinion Change (T0→T3) and Patterns of Preference Shift

		(1) Opinion change (T0→T3)					(2) Patterns of preference shift (%)				
T0	T3	Focus on mid- and long-term reform					Patterns of preference shift	(1) Which admission pathway to prioritize →Mid- to long-term reform		(2) Which admission pathway to expand →Mid- to long-term reform	
		School records	CSAT	Both equally	No opinion	Total		Occurrence (No. of persons)	Share (%)	Occurrence (No. of persons)	Share (%)
Which admission pathway to prioritize	School records	90	31	97	0	218	No shift (maintain initial opinion)	164	33.5	177	36.1
	CSAT	52	74	83	1	210					
	No opinion	13	15	34	0	62	Shift	326	66.5	313	63.9
Which admission pathway to expand	School records	62	24	66	0	152	No opinion →opinion	62	12.7	42	8.6
	Status quo	30	17	44	0	91	Opinion change	263	53.7	270	55.1
	CSAT	48	71	85	1	205	Opinion →No opinion	1	0.2	1	0.2
	No opinion	15	8	19	0	42	Total	490	100.0	490	100.0
	Total	155	120	214	1	490					

Source: Raw data from citizen participation surveys for public deliberation the 2022 college admissions reform

<Table 9> College Admissions Reform: Logit Model of Preference Shift Decision

Variable		(1) Which admission pathway to prioritize →Focus on a mid- to long-term reform		(2) Which admission pathway to expand →Focus on a mid- to long-term reform	
Knowledge	Level	-0.074	(0.069)	-0.082	(0.067)
	Gain	0.158	(0.059) **	0.120	(0.057) *
-2 Log L		624.70		641.04	

Note: 1) Dummies for gender, age, region, and supporting parties are included in all models.

2) Knowledge level is expressed as how many answers participants got right in the knowledge quiz, and knowledge gain as the change in the number of correct answers between 1st-3rd surveys.

3) ** and * denote significance (N=490) at 1% and 5% levels, respectively.

Source: Raw data from citizen participation surveys for public deliberation on the 2022 college admissions reform

Meanwhile, doubts were cast on the deliberation effect of the public process as it did not produce a statistically significant top agenda from the list. This result pinpoints the failure to build public consensus, which is the primary purpose of this process. What led to such shortcoming needs further analysis.

<Table 10> College Admissions Reform: Results of Factor Analysis on Four Key Agendas

(1) Explained variance				(2) Factor structure		
Factor	Eigenvalue	Explanatory (%)	Cumulative (%)	Observed variables	Factor loading	Pooled variance
1	1.668	1.190	1.190	Agenda 1. Higher priority on CSAT	0.797	0.635
2	0.071	0.051	1.241	Agenda 2. Higher priority on school records	-0.720	0.518
3	-0.131	-0.093	1.148	Agenda 3. More quota for early admissions	-0.412	0.170
4	-0.207	-0.148	1.000	Agenda 4. Higher priority on CSAT+school records	0.588	0.346
Total	1.402	-	-	Total	-	1.668

Note: Kaiser's Measure of Sampling Adequacy (MSA) is 0.632.
Source: Raw data from citizen participation surveys for public deliberation on the 2022 college admissions reform

To that end, factor analysis is employed again, and it is to extract a meta issue from four final agenda choices. Analyzing approval ratings for four agendas in the third survey ((1) of <Table 10>) revealed that the eigenvalue of Factor 1 (1.668) is the largest by an overwhelming margin with little explanatory power of other factors. It means approval ratings for agendas can boil down to one common factor. The structure of Factor 1 ((2) of <Table 10>) showed a very high positive correlation (0.797) with the approval rating of Agenda 1 (higher priority given to CSAT) and a high positive correlation (0.588) with that of Agenda 4 (higher priority given to CSAT & school records and transcripts). On the contrary, Factor 1 displayed high negative correlations with Factor 2 (prioritizing school records and transcripts) and Agenda 3 (more seats under early admissions).

Then, what would be that single common factor that satisfies the relationships mentioned above? The author concludes that it is what captures preferences for CSAT. In other words, the meta issue, how much CSAT is favored, determines the degree of support for those four agendas. Here, factor scores are individual participants' potential preferences for the exam, and they are measurable in each survey round, assuming the same factor structure.

Using a kernel density function, [Figure 3] illustrates the CSAT preference distributions of individual participants surveyed in all three rounds. As the graph shows, CSAT preference distributions of the deliberation group were squeezed together into a single peak before deliberation; however, afterward, they stretched out to the extent that the dominant preference was not discernable. Such a change in the preference distribution may have directly contributed to the failure in reaching a meaningful conclusion in the public debate.

The dispersed preferences is problematic in two respects. Firstly, the deliberation might have progressed to reinforce opposing viewpoints instead of narrowing the opinion gap by embracing the strengths of counterparts' arguments. Secondly, it is questionable whether the agenda-setting process properly captured the main issue. Although the opinion bases presented meta-issues of fair opportunities in education and system efficiency as the principal subject matters, the four agendas to be discussed were differentiated by the potential

The factor analysis extracted a single common factor (meta-issue) that runs through four agendas.

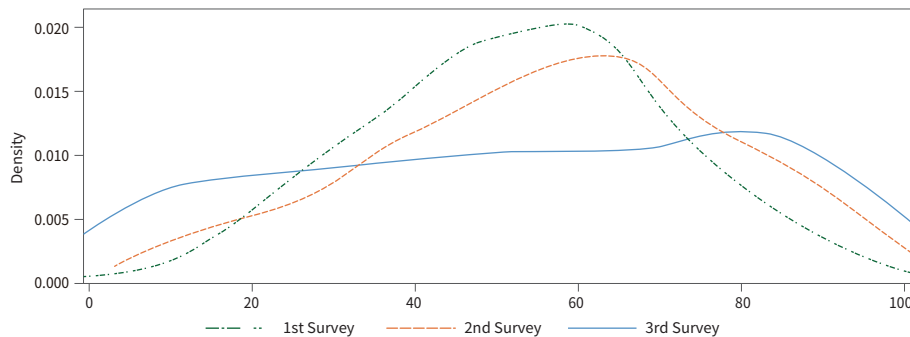
In light of the correlation with each agenda, the meta-issue translates as preferences for CSAT.

Potential preferences for CSAT tend to be more scattered after the deliberative process.

The deliberative process might have reinforced the divide among participants rather than closing it, and perhaps agenda-setting was not properly designed to capture key agenda issues.

preference for CSAT alone. In the end, a profoundly intricate issue in the educational institution of the college admissions system turned into an oversimplified problem.

[Figure 3] College Admissions Reform: Changes in Distribution of Meta Preferences



Note: Factor points are converted to percentage points for a better visible understanding.

Source: Raw data from citizen participation surveys for public deliberation on the 2022 college admissions reform

V. Conclusion and Policy Implications

Thus far, this study has empirically evaluated problems of public deliberation based on the specific cases of Shin-Kori NPP Units 5 and 6 and the college admissions system reform in terms of participation and deliberation.

From the perspective of participation, both citizen groups demographically represent the general population but lack attitudinal representativeness and inclusiveness. To be more specific, the two over-represent progressive tendencies. This problem seems to come from the limited selection of citizen participants only to those who expressed willingness to take part. Accordingly, serious consideration should be given to over-sampling minor opinions even among those who want to participate.

Regarding deliberation, both cases merit fairly positive assessments in light of opinion formation based on evidence and enhanced understanding of the issues at hand. The analysis found that learning about the issues in a short time facilitated formation of viewpoints. Moreover, the outcome of preference shift via the deliberative process, i.e., rational opinion formation and adjustment, deserves high praise. About 40% and 60% of participants changed their initial position on Shin-Kori nuclear reactors and the admissions system reform, hinting at the possibility of changing initial positions by way of public deliberation.

However, the deliberative processes have shown a limitation by coming short of building a social consensus, e.i., the formation of public opinion. In particular, the college admissions reform case had opinions dispersed rather than converging. Indeed, not all public deliberation is subject to consensus and agreement, especially deliberative opinion polling. In itself, divided opinions in a well-designed deliberation process do not pose a problem as they merely reveal the gap in actual public opinion. On the contrary, poor agenda-setting or opposing viewpoints drifting further apart throughout the process may be problematic.

[Figure 4] schematically represents the choice structures of the two deliberations. The Shin-Kori case proceeded with clear-set agendas: suspension/resumption of constructing Shin-Kori NPP units 5 and 6 and the nuclear energy policy direction. As the relations between two opinion

Regarding participation, the criteria of demographic representation were satisfied, but the discourses were neither representative nor inclusive enough.

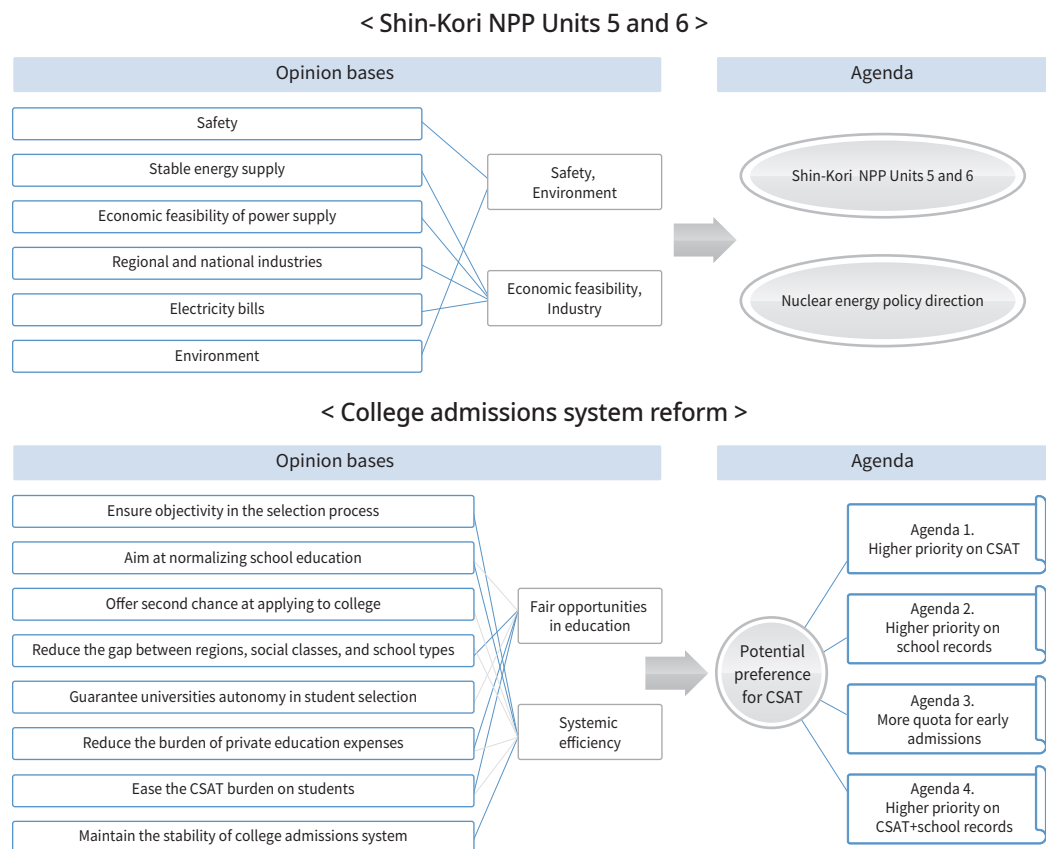
As for deliberation, the analysis confirmed that the better participants understand the debate issue, the more likely they form a reasonable opinion.

However, public deliberation came short of building a social consensus through its process.

A deeper analysis is necessary as to what caused the dispersion of viewpoints in the case of college admissions reform.

bases and two agendas are logically consistent, participants could draw a composite conclusion of construction resumption (for economic feasibility) and downsizing nuclear power plants henceforth (for safety and environment).

[Figure 4] Choice Structure in Public Deliberation on Shin-Kori NPP Units 5 and 6 and 2022 College Admissions Reform



The design of the admissions reform debate was unnecessarily complex.

Without a step closer to public opinion formation, public deliberation is just another form of majority rule with some deliberation process.

On the other hand, the college admissions reform case can be reduced to a choice structure of two opinion bases—fair opportunities in education and systemic effectiveness—to decide on a single issue of how much weight CSAT should have in admissions. In addition, this debate presented a complex situation where participants had to figure out hidden intent under each agenda because of ambiguous issues. By the way, such vagueness is against the basic condition for clear agenda-setting in public deliberation. This case is a clear example of the importance of planning, which stresses the need to carefully design the deliberative processes reflecting key issues.

Most public deliberation in Korea is carried out through deliberative polling (deliberative public survey) at the government's request. The government's expectation from public deliberation is less of a full consensus, based on gathered opinions from participants, but more of a substitute decision-maker who will settle the tough situation on its behalf. Under the circumstances, it is easy to think of it as a success if only the support of the majority is confirmed, even without a group consensus. However, it is worth noting that public deliberation without a step closer to forming a public opinion is just another form of majority rule with public deliberation in the mixture.

Public deliberation is now growing out of its infancy into a mature stage in Korean society. Instead of responding to society's occasional, fragmented needs, public deliberation needs to be better systemized with more resources and capabilities to plan and manage its operation to meet the rapidly expanding demand. Based on a comprehensive understanding of the purpose and process of public deliberation, now is time to consider how to establish a system that could plan the agenda and scope of public deliberation and compile cumulative experiences regarding the deliberation process and management.

Now is the time to build resources, capacities, and institutional mechanisms for more systematically designed and managed public deliberation.

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