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Public Acceptance of Nuclear Energy Policies in South Korea

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Synonyms

Policy acceptance; Policy compliance

Introduction

Group theorists and pluralists view public policy as a product of group interaction or struggle (Dahl 1978; Truman 1971). A large number of groups that are more, or less, well organized according to social, economic, and demographic similarities or needs compete with each other in the political arena. These groups put pressures on the government to gain access to the key points at which policy decisions are made (Theodoulou 2013; Truman 1971). Considering that public policy is the result of a process of power struggles among competing individual and group claims, it is critical for policy-makers to first identify the relevant stakeholders who may be affected by or who may influence the policy process. Particularly, when facing complex combinations of interest groups, any conflict concerning stakeholders' different needs is expected to be assessed and addressed. Moreover, in cases where a policy decision should be jointly made among stakeholders who pursue conflicting needs, policy-makers are required to minimize the adverse impacts of a policy and increase the likelihood that disaffected groups will still accept the policy.

However, conflicts can occur among various stakeholders, including conflicts between the government and affected groups, conflicts among different policy target groups, conflicts between the government and civic groups, and conflicts between central and local governments. Therefore, it is inevitably challenging for policy-makers and public managers to make high quality decisions while remaining responsive to the different groups those decisions affect. Meeting such challenges may pose serious problems, particularly when policy issues are technically complex and value-laden, when the policy decision is perceived as risky, and/or when multiple interests operate in an atmosphere of conflict and mistrust (Beierle 1999). For instance, the construction of facilities such as nuclear power plants, radioactive waste management facilities, incinerators, prisons, or landfills are prone to raising heavy concerns about localized risks (Jenkins-Smith et al. 2011). The public's resistance to hazardous or unwanted facilities leads to the *not in my back-yard* (NIMBY) or so-called *locally unwanted land*

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uses (LULU) phenomenon (Schiverly 2007). Opposition to potentially hazardous facilities may be attributed to concerns about environmental threats, perceptions about facility safety, economic concerns about reduced property values, or localized losses that may outweigh prospects for some larger public good, dynamics in the public discourse of risk, or even mistrust in other participants and the information they provide (Jenkins-Smith et al. 2011; McAoy 1998; Schiverly 2007). Despite such strong opposition, many developed and developing countries are also faced with the dilemma posed by siting such hazardous facilities, particularly nuclear energy facilities, as a major energy source to protect national energy security needs (Jenkins-Smith et al. 2011; Kim et al. 2014). In this vein, understanding the public perception of the localized risks is substantial. Focusing on the case of the historical development of Korean nuclear energy policies, this entry addresses issues related to public acceptance of nuclear energy policies.

Public Acceptance of Nuclear Energy

Public acceptance of nuclear policy refers to "people's willingness or readiness to receive, within their governmental boundaries, the operation of nuclear power reactors for electricity generation and various applications of nuclear technologies, as determined by perception sharing" (Kim et al. 2014, p. 476). As reflected in this definition, public acceptance is inherently related to the attitudes of policy target groups, and for this reason, it may be used in a sense similar to policy compliance, which refers to policy target groups' willingness to obey a government's request, policy direction, and/or the regulation of action in the guidance and the implementation process. While policy compliance ensures that expressed behavior conforms to a set of prearranged rules of conduct, public acceptance highlights not only changes in outward behavior but also changes in internal value systems and attitudes (Jung 2008). Therefore, public acceptance can be understood as a complex social process in which the government understands the value system of target groups and encourages a positive attitude so policy groups will accept it. In other words, public acceptance involves an active process to achieve policy goals by reducing the gap between stakeholders' preferences and the government's policy direction. In this sense, public acceptance of nuclear policy can be understood as an overall process to understand the value system of the government-drafted nuclear energy policy and to induce positive attitudes to reach a consensus when conflicting needs and value systems exist among various stakeholders.

Researchers have investigated the factors affecting public acceptance of nuclear power. These factors include personal beliefs and attitudes (e.g., Midden and Verplanken 1990), general worldviews (Peter and Slovic 1996), a policy discourse that framed nuclear power in terms of climate change mitigation (Bickerstaff et al. 2008), perceived risks of nuclear power (Greenberg 2009; Whitfield et al. 2009), perceived benefits (Tanaka 2004), citizens' trust of nuclear institutions or their government (Ansolabehere and Konisky 2009; Greenberg 2009; Tanaka 2004; Whitfield et al. 2009), perceived costs of nuclear power (Ansolabehere and Konisky 2009), and so on.

Liu et al. (2008, p. 2834) further specify sources of subjective judgments that result in the acceptance of nuclear power with four categories and nine relevant issues as follows:

- Opinions on benefits of nuclear power: (1) benefit to the national power supply; (2) benefit to lower electricity prices; (3) benefit to environmental protection.
- Judgment of the risks: (4) judgment on operational risks of nuclear power plants; (5) judgment on the risks of nuclear waste (nuclear proliferation is not yet included here).
- Knowledge of nuclear power: (6) how much nuclear knowledge the public has; (7) self-assessed familiarity with nuclear power.
- Trust in the parties concerned: (8) trust in government agencies; and (9) trust in nuclear experts.

On the other hand, in their model of public acceptance of nuclear power, Visschers et al. (2011, p. 3623) highlight risk perception and benefit perception as key factors predicting public acceptance. In particular, benefit perception consists of two types of benefits, including perceived benefit for the climate (it is CO_2 neutral and therefore an effective mitigation strategy against climate change) as well as the perceived benefit of a secure energy supply (it will secure the fulfillment of our energy demands).

Based on previous studies on public acceptance of or resistance to nuclear power, this study specifies four dimensions of public acceptance of nuclear energy policies particularly in the context of South Korea. The four dimensions are technology acceptance, risk acceptance, economic acceptance, and political acceptance.

First, nuclear energy policy involves technology acceptance because it deals with highly advanced technologies. Whether it is a nuclear power plant or a radioactive waste management facility, public acceptance is determined by whether the technology can minimize the negative impact by significantly reducing the potential risk probability. This is equivalent to the acceptance of almost all groups of stakeholders because any group would prefer to minimize the risk probability through proven technology.

The second dimension of public acceptance of nuclear policy is risk acceptance which should be considered beyond the acceptance of the technology itself. Judgment of a technology is not made solely by the calculation of objective risk probabilities; instead it is socially constructed by considering the reputation of institutions and persons dealing with formal/informal information and related technology. In other words, risk acceptance involves an understanding of the political, social, economic, and cultural impacts of technologies. In particular, risk acceptance can be differently assessed depending on the group to which one belongs. Local residents living near nuclear facilities will demonstrate high levels of public concerns due to the risk, while groups who use power cheaply produced by nuclear power will emphasize the economic benefits and hold a stance that some risks should be accommodated.

Third, economic acceptance may be different between groups that benefit directly from the location of nuclear facilities and those that do not. Groups with huge economic rewards can take some risks, but those exposed to risks without economic rewards may resist because they have no incentive to take risks. These economic rewards include both direct compensation and indirect economic effects. The impact on the local economy in the construction and operation of nuclear facilities as well as the direct economic compensation received by local governments due to the location of nuclear facilities can act as important factors in determining public acceptance of nuclear power.

Finally, public acceptance of nuclear power can be shaped by political trust and ideology, which is referred to the political dimension of public acceptance. Citizens' political trust, a global affective orientation toward the governing body and politicians, has long been thought to reflect policy satisfaction and acceptance (Rudolph and Evans 2005). Citizens are more likely to support an expansion of nuclear power when the decision-makers (e.g., a president, ministers, and politicians) are perceived as trustworthy. Likewise, citizens' willingness to accept the nuclear policy highly depends on their political support, and therefore, it is even complicated for the government to consider conflicting needs and political preferences of various stakeholders in the process of decision-making.

Case: Historical Review on the Development of Nuclear Power in South Korea

South Korea first became interested in nuclear power and technology in the 1950s due to a lack of energy sources needed to generate electricity. In 1959, the Korea Atomic Energy Research Institute (KAERI) was established to conduct basic research on nuclear power, technology and the safety of nuclear power plants, and economics of nuclear power. On March 1962, TRIGGA Mark-II, Korea's first research reactor, was

provided by US firm General Atomics and General Dynamics under an agreement signed on 3 December 1958 to acquire practical nuclear technology. Based on the acquisition of such technological capabilities, the GORI-1 reactor, Korea's first commercial nuclear power plant, started commercial operation in April 1978 after 7 years of construction.

In the 1980s, additional PWR (Pressurized Water Reactor) and CANDU (Canadian Deuterium Uranium Reactor) nuclear power plants were built, and as part of effort to localize nuclear fuel cycle technology, the Korea Nuclear Fuel Company (KNFC) was established in 1982 and has been successfully producing nuclear fuel since 1989. During this period, domestic participation increased to enhance self-sufficiency in nuclear power plant construction and technology.

In the 1990s, through a technology transfer contract with the USA to increase self-reliance in nuclear power technology, Korean entities took responsibility for the entire projects, while foreign suppliers were mainly consultants. As a result, OPR-1000 (Optimized Power Reactor-1000), a Korean Standard Nuclear Power Plant (KNSP), was constructed. In the 2000s, Korea has made an all-out effort to supplement the core technologies, and in 2012, Korea fully attained self-reliance in nuclear power technology for long-term self-reliance in fuel and plant design, manufacturing, construction, and operation. South Korea's first Advanced Pressurized Reactor with a 1400 MW (e) generating capacity (APR-1400) project began in 1992 with the basic design completed in 1999. The APR-1400 was developed by making improvements and modifications to the KNSP, and its commercial operation commenced in 2016. Korea's APR-1400 was exported to the UAE. Currently, a total of 24 nuclear power plants produce about 30% of the nation's electricity (Kim 2018). Table 1 provides the summary of key characteristics of each period of the development of nuclear power in South Korea.

South Korea became active in building and operating nuclear power plants because it lacked the energy sources to sustain its economic growth. The reserves of coal, the source of energy for thermal power generation, were far from sufficient, and oil and natural gas were not available, so thermal power alone could not produce enough cheap electricity for economic growth. Moreover, a stable supply of electricity was needed for sustainable economic growth, but the high dependence on energy sources overseas was bound to cause a sharp rise in the unit cost of electricity production due to price changes and would eventually hinder the competitiveness of industries in Korea. In this context, nuclear power generation began to receive a spotlight not only in terms of stability and efficiency, but the trend has been invigorated through the United Nations Framework Convention on Climate Change in 1992, which is a framework for international cooperation to combat climate change and prevent global warming due to the indiscriminate use of fossil fuels. Nuclear power generation was considered an alternative to greenhouse gas reduction in terms of generating little carbon dioxide compared to thermal power generation. In spite of the TMI nuclear accident in the USA in 1979 and the Chernobyl nuclear accident in the former Soviet Union in 1986, nuclear power has continued to grow in almost all countries. Since 2008, the Korean government has established a National Energy Master Plan every 5 years to cover the next 20 years, and in January 2014, the Korean government announced the Second National Energy Master Plan up to 2035. This plan outlined the future energy policy direction, including the development and deployment of nonfossil energy such as nuclear and renewable energy. South Korea seeks to achieve a 41% share of nuclear energy in regard to the total energy consumption by 2030.

There is no doubt that the potential of nuclear energy is tremendous, but there are also downsides. As the proportion of nuclear power plants has increased in South Korea, the problem of radiological waste management has begun to emerge, the nondemocratic behavior of the government in the site selection process of radioactive waste management facilities has begun to antagonize local residents, and because of the participation of antinuclear environmental groups, anxiety about nuclear power generation and distrust in the government has begun to

Public Acceptance of Nuclear Energy Policies in South Korea, Table 1 Development of nuclear power in South Korea

Period	Major Characteristics	Major Nuclear Plant Development
1950s 1960s	Introduced a research unit reactor	• TRIGGA Mark-II
1970s	Construction of the first nuclear power plant; Turnkey contract	• Kori 1: PWR (Commercial operation: 1978) • Wolsong 1: PWR (Commercial operation: 1983) • Kori 2: PWR (Commercial operation: 1983)
1980s	Localization of nuclear fuel cycle technology; Non-Turnkey contract	• Kori 3 & 4: PWR (Commercial operation: 1985 & 1986) • Ulchin 1 & 2: PWR (Commercial operation: 1988 & 1989) • Younggwang 1 & 2: PWR (Commercial operation: 1986 & 1987)
1990s	Increased self-reliance in nuclear power technology	• Younggwang 3 & 4: PWR (Commercial operation: 1995 & 1996) • Wolsong 2, 3, & 4: Candu (Commercial operation: 1997, 1998, & 1999)
2000s	Self-reliance in nuclear power technology (OPR-1000) Advanced nuclear power plant technology (APR-1400)	• Ulchin 3 & 4: OPR-1000 (Commercial operation: 1998 & 1999) • Ulchin 5 & 6: OPR-1000 (Commercial operation: 2004 & 2005) • Shin Kori 1 & 2: OPR-1000 (Commercial operation: 2011 & 2012) • Shin Kori 3 & 4: APR-1400 (Commercial operation: 2016 & 2019)
2010s	Advanced nuclear power plant technology (APR+)	• Nuclear Power Plant Technology Development Plan (Nu-Tech 2012)

Source: Lee (2012)

worsen. The fact that it took more than two decades to decide the low and intermediate level radioactive waste disposal sites may be evidence of how many conflicts there have been due to such distrust. Although a gap apparently exists between the nature of accidents that could occur at nuclear power plants and those that could occur in radioactive waste management, people are becoming nervous about unclear power in general in the wake of the problems at the Fukushima nuclear power plant in Japan, questioning whether nuclear power is a sensible option for energy production in light of the perceived risks and provoking antinuclear groups to lead an antinuclear movement. Moreover, as the Moon Jae-in government promised to reduce the country's dependence on nuclear energy and has implemented a nuclear phase-out policy, the future of South Korea's nuclear power programs has seemingly come to the end.

A Historical Analysis of Public Acceptance of Korea's Nuclear Policy

Public Acceptance of Nuclear Policy in South Korea: 1940s–mid 1980s

In 1948, the Republic of Korea (South Korea) was formally established as a free democracy, with Rhee Syngman as the first president. It has been paying attention to nuclear power since the establishment of the Rhee administration. At the time, there were few industrial facilities and power production bases for national development, and even existing facilities were destroyed during the 1950–1953 Korean War, making power production an urgent task. For this reason, the Rhee administration (1948–1960) established the Korea Atomic Energy Research Institute (KAERI) to promote nuclear technology research, and South Korea became a member of the International Atomic Energy Agency in 1957. The

Atomic Energy Law was passed in 1958, and in 1959, the Atomic Energy Institute was launched as a government agency dedicated to nuclear energy policies, and a nuclear power plant design and manufacturing company was established and fostered as an affiliated organization (Jung 2018).

Although President Rhee Syngman stepped down in 1960 due to the April 19 revolution, the project to introduce nuclear reactors continued, and nuclear power plant design and nuclear fuel manufacturing technologies were also steadily studied. At that time, there was no controversy over nuclear acceptance because of a low level of public awareness about nuclear power, and it was extremely rare for the government to inform or seek consent from the public about the public policies it was pushing.

The Third and Fourth Republic was a period of promoting the economic development of the state by President Park Chung-hee, whose top priority was the growth of a self-reliant economy and modernization. Under the slogan of "Development First, Unification Later," the economy grew rapidly with vast improvement in the industrial structure, especially in the basic and heavy chemical industries, and the supply of electricity for economic development became the biggest concern of the administration. The Park administration (1963–1979) prepared legal and institutional devices necessary for the construction of nuclear power plants, pushed ahead with the selection of nuclear reactors to be introduced in Korea based on economic and technological feasibility, and concentrated on training nuclear power plant operation personnel. At that time, most people agreed with the national task of economic development, and there were no groups unhappy with or actively opposed to the government's nuclear energy policy, so it was more like policy compliance than discussing public acceptance (Jung 2018).

The situation was similar under the Chun Doo-hwan administration (1980–1988). As there was little controversy over citizens' acceptance of nuclear power, the government implemented an aggressive nuclear energy promotion policy by setting a localized target of 95% for nuclear technology and was continuing to build nuclear power plants. A total of seven nuclear power plants had been constructed and commercialized by 1987 when President Chun Doo-hwan was in power, and there were also nuclear power plants under construction. However, the majority of the public did not take issue with the potential risks of nuclear power plants but rather generally accepted them in terms of providing a driving force for the nation's development.

Overall, public acceptance of nuclear power in this period relied on high levels of technology acceptance in that the acquisition of technological capabilities of developed countries and the introduction and transfer of new technology from these countries were believed to advance domestic technological development. Moreover, considering that South Korea had experienced a government-driven rapid economic growth in this period of time, the Korean public expressed a high level of trust in the positive economic benefits of nuclear power as well as trust in government agencies. On the other hand, high levels of technology acceptance and higher trust in nuclear experts and institutions led to a lower risk perception of technological risk probability. Therefore, the high levels of technical, economic, and political dimensions of public acceptance as well as low levels of risk perception reinforced the laypeople's acceptance of nuclear power.

Public Acceptance of Nuclear Policy in South Korea: Mid 1980s–2000s

The Sixth Republic was established in 1987 and remains the current republic of South Korea after the June 29 Declaration, which was called for holding direct presidential elections and the restoration of civil rights. Roh Tae-woo became president in the first direct presidential election and was officially inaugurated in February 1988. As democratization has progressed rapidly, South Korea has been experiencing a flurry of complaints about a military regime and past vestiges of authoritarian rule. This has made it difficult for the government to demand policy compliance with its closed actions any longer. For decades under the military regime, the Korean government had not paid attention to understanding the value system of local residents and how to make efforts

to change their behavior, and in turn Koreans have shown high levels of distrust in government.

The issues regarding public acceptance of nuclear policy in South Korea have emerged not because of the risk of nuclear power plants but because of conflicts around radioactive waste generated as a by-product of power generation and siting conflicts during the selection and evaluation of a site suitable for a nuclear management facility. The Korean government has been discussing plans for radioactive waste management since 1983 and contracted outside consultation agencies to draw up candidate sites from 1986 to 1987 while the overall process was not publicly announced. However, the residents living in the candidate sites revealed that the process was not transparent, which led to serious distrust about the government's nuclear policy.

Even after the government publicly announced the selection process of candidate sites, public acceptance of nuclear power remained at a very low level due to a severe backlash from residents. In addition to distrust in the government, the democratization process amplified the public belief that local residents do not need to accept the government's policies if they do not conform to their own value system. Moreover, antinuclear activities dramatically increased in conjunction with the rapid growth of civil society as well as concerns about nuclear safety and criticism of the nuclear policy making process. In this context, a set of factors caused the Korean government to experience massive policy failures in securing radioactive waste sites, which in turn heightened distrust in government and public acceptance of nuclear energy policies remains extremely low.

Moreover, the accidents at Three Mile Island in 1979 and Chernobyl in 1986 provoked negative public attitudes toward nuclear power, and antinuclear groups highlighted the potential damage from the released radioactive materials and the possibility of radioactive contamination. Through the social amplification processes (Pidgeon et al. 2003), nuclear accidents stigmatized nuclear power (Flynn 2003). Although nuclear accidents are rare, their severe damage generates a strong signal that perpetuates a negative image or stigmatization of nuclear power, and such risk perception has structured the fear of nuclear power and influenced public acceptance of nuclear power being remained extremely low.

Ironically, however, nuclear power plants have been continuously constructed and operated even after democratization despite more than seven major opposition campaigns in the selection process of radioactive waste repositories. The conservative administrations of Roh Tae-woo (1988–1993) and Kim Young-sam (1993–1998) focused on developing and implementing mid- and long-term plans for the nation's nuclear research and development. The progressive administrations of Kim Dae-jung (1998–2003) and Roh Moo-hyun (2003–2008) also established a comprehensive long-term plan for nuclear power development and expansion and planned to continuously construct eight additional Korean Standard Nuclear Power Plants by 2015 (Jung 2018). The development of nuclear power in Korea indicated that political, economic, and technology acceptance remained still high because there have not been any significant accidents at South Korea's nuclear power plants and the proportion of electricity production from the nuclear power cannot be ignored. However, the combination of local residents and antinuclear groups armed with specific ideologies and values created a severe backlash, which led to an increase in the awareness of the risks, eventually affecting public acceptance of nuclear power as a whole.

Since 1986, the Korean government has looked for a nuclear storage site for low- and intermediate-level radioactive waste (LILW), but for approximately 20 years, Korea was unable to find a location for the radioactive waste management project. However, long-term discourse between government and stakeholder groups led to public acceptance and trust, and accordingly, the policy was changed to promote the democratic process, improve procedural transparency, consider public acceptance, and increase credibility regarding safety (Yun 2008).

In 2005, for instance, various efforts were made to secure an LILW disposal site, and as a result, the Special Law on the Support for the Volunteer Site of the Low and Intermediate Level Waste Disposal Facilities was legislated on March 31, 2005. This law ensures the safety of the facility, promotes a democratic siting

process, and provides financial support for economic development and quality of life in the area. Four local governments (Gyeongju, Gunsan, Youngdok, and Pohang) applied as volunteer sites, and these candidate sites were evaluated and confirmed to meet the safety recommendation standard. As a result of resident voting, Gyeongju was selected with the highest approval rate (89.5%) and received a special state subsidy of 300 billion won (about $288 million). During the siting process in 2005, antinuclear groups' activities rapidly declined and overall public acceptance of nuclear energy policies considerably increased. In 2005, for instance, local residents in the four regions blocked the intervention of antinuclear groups, tried to assess their economic feasibility, and attracted medium- and low-level radioactive waste dumps. The government, which had identified major causes of extreme opposition, created a referendum that allowed local residents to participate in the site selection process directly, provided economic incentives, and tried to increase acceptance of the project by preparing various systems and procedures. Thus, the government's efforts for understanding the value and needs of stakeholders (e.g., local residents, general public, local government, local business leaders), developing strategies (e.g., economic incentives), ensuring procedural transparency, and eliminating negative perceptions of nuclear power were key to overcoming resistance to nuclear power and increasing public acceptance of nuclear energy policies.

In this period of democratization, public acceptance of nuclear power waxed and wanted. Despite initial enthusiasm in the 1960s and 1970s, the Korean public expressed significant levels of opposition to nuclear power due to distrust in the government decision-making process, antinuclear activities, and the nuclear accidents at TMI and Chernobyl. The low levels of technological and political acceptance and high level of risk concerns led to extremely low levels of public acceptance of nuclear energy policies. However, opposition to nuclear power appears to have decreased steadily in South Korea since the mid-2000s when newly enacted Special Law ensured the technological safety of the nuclear facility, promoted transparent democratic siting process, and provided a financial support to the volunteer sites for their economic development and quality of life in the area. Thus, enhanced technological, political, and economic acceptance helped people have favorable than unfavorable attitudes toward unclear energy.

Public Acceptance of Nuclear Policy After the 2011 Fukushima Accident (Early 2010s)

During the Lee Myung-bak administration (2008–2013), the government adopted an ambitious Green Growth Strategy in 2009 and tried to revive nuclear power plants under the "Low Carbon, Green Growth" vision (Jung 2018). However, the March 2011 Fukushima nuclear accident in neighboring Japan had a huge impact on Korea's nuclear policy acceptance. On March 11, 2011, the cooling systems of the Fukushima Daiichi nuclear power plant were devastated due to a 9.0 magnitude earthquake and tsunami. Compared to nuclear accidents and incidents such as Chernobyl and TMI, the nuclear accident in a neighboring country amplified anxiety about nuclear power generation and caused people to be suspicious of the safety of nuclear energy (Wang and Kim 2013). In this situation, antinuclear groups, which had slowed in mid 2000s, became actively involved as the issue of managing spent nuclear fuel (SNF) emerged as a key issue in the nuclear policy.

South Korea has secured low- and intermediate-level radioactive waste management facilities but has yet to come up with a high-level radioactive waste management policy, including spent nuclear fuel (SNF). High-level radioactive waste (HLW) is more toxic than LILW and has a longer half-life (radioactive half-life time to return to natural radioactivity state). As a result, the government delayed the selection of the management site and faced strong resistance from local residents. In particular, while the government decided to draw up management policies based on public consensus, it was not easy to reach an agreement among various stakeholders, including residents near nuclear power plants, experts, and antinuclear groups. Local residents near nuclear power plants

insisted on considerable economic incentives if the high-level hazardous waste was not removed. Antinuclear groups argued that the issue of managing high-level waste would be discussed only after a decision is made to shut down the plant. In addition, expert groups argued that the plant must be shut down if spent nuclear fuel in temporary storage inside a nuclear power plant is not brought out of the plant. In this context, the Policy Forum on SNF management was organized by government. Based on a review of SNF management options and public opinions, public engagement started with the launch of the Public Engagement Commission on SNF management in 2013. The commission decided major principles and methods of the public engagement programs, initiated public consultations and discussions, submitted recommendations to the government, and drew up the consent-based national plan on SNF management. However, the policy decision was not smooth due to resistance from residents near nuclear power plants, antinuclear groups, and a delayed public debate process. The government had to push for a re-publicization effort from 2019.

Only a few studies have been conducted to investigate how a nuclear power plant accident influences public acceptance of nuclear power in a longitudinal setting. Two European studies found that people had more negative attitudes toward nuclear power and a lower level of acceptance after the Chernobyl catastrophe (Eiser et al. 1989; Verplanken 1989). Specifically using the case of Fukuyama accident, Visschers and Siegrist (2013) were able to follow 790 Swiss people before and after Fukuyama (5 months before and directly after the accident) to measure public acceptance, perceived risks, perceived benefits, and trust related to nuclear power stations. From a longitudinal study, they found that in general, people presented a more negative perception of nuclear power after the accident. However, their findings show that even after the nuclear accident, the public did not dramatically change their attitudes toward nuclear power. Moreover, the public still considered the perceived benefits as relevant.

In the case of Korean public acceptance after the Fukuyama accident, it is consistently found that the public's risk perception has been dramatically increased and people have become seriously concerned about technological issues at nuclear faculties. While people recognized the economic benefits as important, political debates among various stakeholders and interest groups resulted in complex public discourses about sustainable nuclear policies and eventually led to reducing public acceptance of nuclear power in this period.

Public Acceptance of Nuclear Policy in the Era of Changing Energy System (Mid 2010s–)

Nuclear policies in South Korea emerged as a national concern after the 2011 Fukushima nuclear accident and through public debate on the use of nuclear fuel. Unlike in the past when the majority of the public remained indifferent to nuclear policies, the Fukushima nuclear accident transformed the public's indifference into an active negative perception of nuclear power. Of course, the majority of the general public still does not pay much attention to South Korea's nuclear energy policy. While recognizing the risks, they perceive that there is no alternative power source to replace nuclear power and nuclear policies do not have a significant impact on their individual lives. Thus, in general, residents living near nuclear power plants have shown high levels of economic and technology acceptance but low levels of risk acceptance, while antinuclear groups have demonstrated low levels in all four dimensions of public acceptance. The general public did not receive any substantial economic benefits or compensation while recognizing the positive economic impacts of nuclear power. Instead they have been indifferent to nuclear energy policy or quite accepting of nuclear power since their economic/political acceptance is moderate. However, since the inauguration of President Moon Jae-in, nuclear policy has become a hot topic of debate among the public, because he pledged to phase out coal and nuclear energy considering the public's growing concerns about air pollution and nuclear safety.

The Moon administration (2017–2022) is emphasizing the transition to safe and clean renewable energy by abolishing existing nuclear-

centered energy policies. President Moon's pursuit of a nuclear-free era made the fate of the two ongoing new nuclear reactor construction projects controversial, sparking heated debates between pro- and antinuclear groups in South Korea. Amid the public's growing concerns about nuclear safety, the Moon administration has emphasized the damage from the Fukushima nuclear accident, which was nearly 220 trillion won, and stressed the safety of nuclear power plants due to earthquakes in the densely populated areas of Korea. According to the Moon administration, the economic feasibility of nuclear power plants was assessed relatively high by underestimating the cost of dismantling nuclear power plants and waste management, and the social conflict in securing the site for radioactive waste management facilities was a huge waste of money. Moreover, advanced countries such as Germany and Switzerland are actively trying to convert energy, and the portion of nuclear power generation is decreasing worldwide (for more information: https://www.etrans.go.kr).

At the closing ceremony for the GORI-I reactor in June 2017, President Moon proclaimed that he would review the policy on nuclear power plants entirely. He said, plans for new power reactors would be cancelled and the operating periods of existing units would not be extended beyond their designed lifetime. He added that he would reach a social consensus to suspend construction of units 5 and 6 of the Shin GORI plant. The president's remarks at the time were enough to draw attention from many people who were not previously interested in nuclear power plants. The people's attention to nuclear energy policy has been higher than ever because the former president was impeached due to the state-run meddling scandal and overwhelming public support under these circumstances. However, social conflicts arose due to a lack of consistency in the government's nuclear energy policy. Residents in the region were less receptive to a new nuclear energy policy when the government announced the suspension of construction of Shin-Kori 5 and 6 reactors. Local residents actively protested the nuclear phase-out policy, recognizing that the huge economic benefits from the construction and operation processes could be eliminated. In the end, a public discussion was conducted on whether to resume the construction of Shin-Kori Units 5 and 6, and the general public decided to resume the construction in consideration of the burial costs.

In 2019, the government has reinvigorated public debate on its spent nuclear fuel management policy. The government has made significant progress in terms of democratic decision-making process compared to the past; however, it is still unknown whether public engagement can increase public acceptance of nuclear policy when it comes to the different values and needs of stakeholders.

Conclusion

This entry examines the public acceptance of South Korea's nuclear policy using a multidimensional approach. Levels of public acceptance are determined by the various groups interacting with the environmental conditions and the environmental context at the time. Under the Korean government's strong commitment to the nuclear power program for economic development, the question of public acceptance did not emerge, as the majority of the population was advocating for nuclear power. However, as democratization and a degree of economic development have progressed, a lack of efforts to improve transparency and develop consensus through risk communication might reinforce negative perceptions about nuclear power and decrease the level of public acceptance of nuclear power.

International issues as well as domestic ones have a significant impact on public acceptance. The massive nuclear disaster in Japan could lower public acceptance of nuclear policies by raising risk perceptions among uninterested ordinary citizens. Also, the president's political judgment can affect public acceptance as it creates a new context for debates. It should be noted that the government's efforts to maintain consistency in the policy, provide open accurate information to the public, improve transparency and

accountability, increase trustworthiness, and adapt effectively to the changing environment will be beneficial for increasing public acceptance of nuclear policies.

Cross-References

- ▶ Government and NGOs: Relationship and Role Distribution in Public Policy Process
- ▶ Korean Public Administration: Historical Approach
- ▶ Local Autonomy in South Korea

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