



## Let democracy rule nuclear energy

In South Korea, hundreds of well-informed citizens voted on behalf of their country — a technique that should be used more widely, says **Ji-Bum Chung**.

News sites have lately carried plenty of stories of how South Korean delegates paved the way towards historic talks about denuclearization of weapons on the Korean peninsula. A meeting between the US and North Korean presidents is set for May at the latest.

Meanwhile, another, less-prominent nuclear conversation — this time about power generation — shows how democratic societies can make complicated decisions involving highly technical issues.

Some two dozen reactors provide about one-third of South Korea's electricity. In 2016, the nation became the world's fifth-largest generator of nuclear energy. Being smaller than other top producers, it has the highest density of nuclear power plants on the planet.

Few would have predicted this 60 years ago. Just after the Korean War, the country was one of the poorest in the world. Then came some of the fastest economic growth observed anywhere. Nuclear energy provided a stable energy source that both enabled this 'compressed development' and became a symbol of it.

Since the construction of the first nuclear power plant in the 1970s, the government, nuclear facilities and the energy industry have often made decisions with little input from civic groups. But the past two decades have seen violent demonstrations against proposed nuclear facilities. Public anxieties were heightened by the 2011 Fukushima meltdown in Japan and a 2016 earthquake in Gyeongju, which hosts six nuclear power plants within 50 kilometres of population centres, such as my workplace Ulsan, with more than one million inhabitants.

In May 2017, Moon Jae-in, who had pledged to decrease the number of nuclear power plants, was elected president. He halted the construction of two power plants at Shin-Kori in which more than US\$1 billion had already been invested. Fierce debate erupted.

Fundamentally, this was a dispute between the nuclear industry and environmentalists — a clash over economic growth versus safety. It was also a political conflict. Although surveys done last year show that public sentiment towards nuclear energy in Korea is generally negative, people who prefer the right-wing Liberty Korea Party generally favour nuclear energy. Age is also a factor. Older citizens, who lived through the period of compressed development, are more positive about the use of nuclear power plants than are younger ones.

Given the passions that nuclear energy incites, countries around the world have asked citizens to vote on policy. National referendums were used in Sweden (1980), Italy (1987) and Switzerland (1990) to determine whether to maintain or shut down nuclear power plants. But referendums can be blunt instruments: the public is often insufficiently familiar with, or interested in, the scientific, social and economic information necessary for sincere deliberation.

The Moon government took a different tack. It used a 'deliberative

poll' to decide whether to proceed with the additional Shin-Kori plants. This technique was developed by James Fishkin, a professor of communication at Stanford University, California, and has been used to debate topics ranging from public-servant career reform in Brazil to political reform in the United Kingdom. In September 2017, a representative sample of 500 voters was selected on the basis of administrative district, gender and age group, and was sent briefing materials. The next month, the group was brought together for three days of discussions with neutral moderators and pro- and anti-nuclear experts. Participants were briefed on the distribution of earthquake fault lines, the safety features and other technological advances in the planned reactors, and the location of reactors near highly populated areas. Discussions were broadcast throughout the country.

The final vote on 15 October was unambiguous but surprising. Nearly 60% of respondents voted to resume construction. Yet 53.2%

voted to decrease the share of nuclear in the country's energy mix, with 35.5% voting to maintain and 9.7% voting to expand it. It was a nuanced position: respondents thought construction at Shin-Kori should continue for economic reasons; they also thought that nuclear energy should be decreased in the long run for safety reasons. Following the poll, the government resumed work on the two plants at Shin-Kori but cancelled plans to construct six more. There have been no violent protests since.

The deliberative poll faced criticism from both sides. The nuclear industry objected to the poll council's adding a question about the future direction of Korea's energy mix when the original

survey asked only about specific projects. Environmentalists complained that pro-nuclear groups had more resources to make their case, including a strong network of government officials and academics, such as the Korea Atomic Energy Research Institute (one of the largest research institutes in the country). Others thought that the deliberation time was too short and the process for selecting topics was poorly defined.

Although this poll was imperfect, it leaves me optimistic. It is the first attempt in Korea to determine energy policy by broadening and deepening public engagement. Energy is a complicated matter that involves many stakeholders representing multiple beliefs and values. There are lessons here, too, for how nations move forward with other emotive technologies, such as gene editing (see pages 435 and 438) and artificial intelligence.

The decision to consult people to uphold the principle of democracy is a hopeful trend in our chaotic world. ■ [SEE EDITORIAL P.413](#)

**Ji-Bum Chung** is an associate professor at the Ulsan National Institute of Science and Technology in South Korea.  
e-mail: [learning@unist.ac.kr](mailto:learning@unist.ac.kr)

THE  
**DELIBERATIVE**  
POLL FACED  
**CRITICISM**  
FROM  
**BOTH SIDES.**