Chapter **3**

Examples in Other Countries

October 2017

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It will be useful to reference other countries that have a long experience in operating coal-fired power plants, when aiming to gain social acceptance of such facilities. Advanced European nations, for example, have implemented measures to enhance their communicate with the locals on energy infrastructure over the years. Such measures are discussed during meetings of international organizations where these countries are members.

This chapter reviews examples of how communication pertaining to nuclear power facilities works among operators, governments, and the power plant's host community in France, Republic of Korea, Sweden, Switzerland, and the United Kingdom. It also features the case of a movement in India that opposed the installation of a nuclear power plant.

3.1. France

1) Communicating with the Whole Nation on Nuclear Power Generation

In France, an entity called Local Information Commission (*Commission Locale d'Information* or CLI) exists as a forum for communication between operators and residents in areas that host a nuclear facility, although it does not have authority to make a decision on the installation and operation of a facility. In addition, a similar organization called Local Information Follow-Up Commission (*Commission Locale d'information et de surveillance* or CLIS) exists to understand the locals' concerns and perform public relations activities around the installation of a high-level radioactive waste disposal site.

This idea of setting up a commission to improve the flow of information concerning nuclear facilities has been studied in France since the end of the 1970s. In 1981, La Hague Facility Special Permanent Commission (*Commission Spéciale et Permanente d'Information*) was established in the region that hosts the La Hague reprocessing facility. On 15 December 1981, then-French Prime Minister P. Mauroy issued a notice recommending the establishment of a CLI in areas hosting a large-scale energy-related facility such as a power plant with a capacity of 1 million kW or more (regardless of whether it is a nuclear, thermal, or hydroelectric power plant) or a spent fuel reprocessing facility.

In response to the Mauroy notice, CLIs were set up. By 2010, there were about 30 CLIs for civil facilities and 15 CLIs for military facilities throughout France. However, while the Mauroy notice promoted the setup of CLIs, it did not provide legal grounds for their existence nor guaranteed their financial resources.

In June 2006, a law on nuclear transparency and safety (Act No. 2006-686 of 13 June 2006) was enacted. This law obligated the area that hosts a basic nuclear facility to set up a CLI while clarifying the central government's role and responsibility for disclosing information on nuclear facilities and explicitly defining 'continuous evaluation of business activities, communication of information, and consultation over nuclear safety, radiation protection, and influences on the public and environment' as the purposes of a CLI.

The law also prescribed the financial resources of a CLI, its participants, outline of its activities, and its cooperation with relevant institutions. The specific percentage of participants was provided in detail in an ordinance (*décret*) on CLI installation issued on 12 March 2008. The décret stipulated that the form of investment in the CLI's operations should be decided through arrangement among the prefecture hosting the nuclear facility, the central government, and other related municipalities (article 15), and that the representative of the CLI should submit an operation plan (for the next year) and a budget implementation report (of the previous year) to the Nuclear Safety Authority (*Autorité de Sûreté Nucléaire*).

The Act on Transparency and Security in the nuclear field also required that the High-level Committee for Transparency and Information on Nuclear Security (HCTISN) be set up to discuss and supply information on risks of nuclear activities; and on health, environment, and security of nuclear activities. The HCTISN was established with 34 members appointed through a government ordinance issued on 28 February 2008.

The HCTISN is required to

- monitor nuclear activities;
- express its opinion on all related issues;
- handle matters related to access to nuclear safety information;
- propose measures for ensuring and improving transparency in the nuclear field; and
- study issues on all information on nuclear safety and supervision as requested by the nuclear safety minister, chairpersons of the jurisdiction committees of the upper and

lower houses, the scientific and technology selection and evaluation chairperson of the Congress (i.e the *Office Parlementaire D'évaluation des Choix Scientifiques et Technologiques*), CLI chairpersons, and nuclear plant operators.

The HCTISN consists of the Congress, CLIs, operators, related institutions, labour unions, representatives of the related departments and bureaus of the central government, and people with relevant knowledge and experience. The chairperson of the Autorité de Sûreté Nucléaire also participates as a member.

France has been promoting a system that will enhance the transparency and fairness of processes such as project planning since the 1990s. In 1995, the National Public Debate Commission (*Commission Nationale du Débat Public*) was established through Act 95-101, which is an act to reinforce environmental considerations of large-scale projects. It gives the Commission Nationale du Débat Public the authority to accept requests to hold public debates. In principle, anyone can participate in the public debate.

2) Public Opinion on Nuclear Power Generation after The Fukushima Accident

In the wake of an accident at the Fukushima Daiichi Nuclear Power Plant, an internet survey was conducted on 23-24 March 2011 among 1,192 respondents. The following were the results (INSS, n.d.):

Figure 3-1. Public Opinion Concerning Nuclear Power Generation in France Before and After the Fukushima Daiichi Power Plant Accident (%)
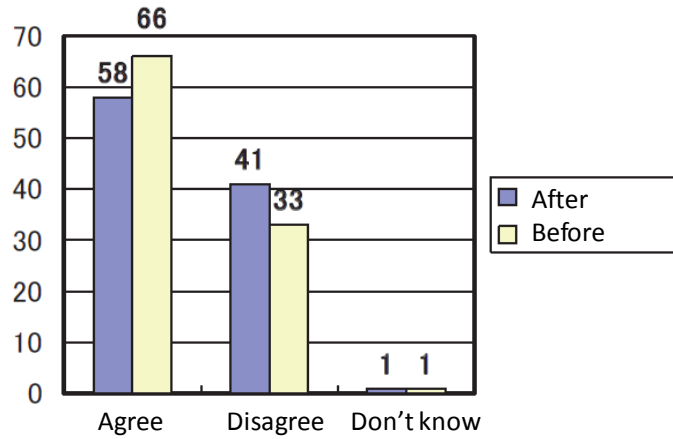

Source:,'A Trend of the Public Opinion concerning Nuclear Power Generation in the United States and Europe after Fukushima Daiichi Power Plant Accident' (Oiso, 2011).

Although majority of the respondents supported the use of nuclear power even after the accident, Figure 3-1 shows that the number of supporters declined nearly 10 points. In a public opinion poll conducted in September 2012 and targeting 1,007 French citizens aged 18 or older, it was reported that 78% of the respondents replied 'Unacceptable' to the question of whether an increase in electricity charge after the cessation of nuclear power generation is acceptable. Meanwhile, 21% responded 'Acceptable' while 1% did not answer the question.

A thesis that appeared in the *Journal of Radiological Protection* in 2016 (Turcanu et al., 2016) carried the results of a survey on the level of satisfaction of French people on information on radiation. Of 966 samples, a result showed that the French people are less satisfied with information supplied by the nuclear power industry than information supplied by medical workers at hospitals and researchers at universities. Majority think that consumption of vegetables harvested around a nuclear power station is not favourable because of the effects of radioactive material. In the meantime, the public trust in authorities who took action to lower risks of accidents and radioactive material exposure at nuclear facilities remains high (Figure 3-4).

Figure 3-2. Satisfaction with Public Information on Ionising Radiation Provided by Different Communicators
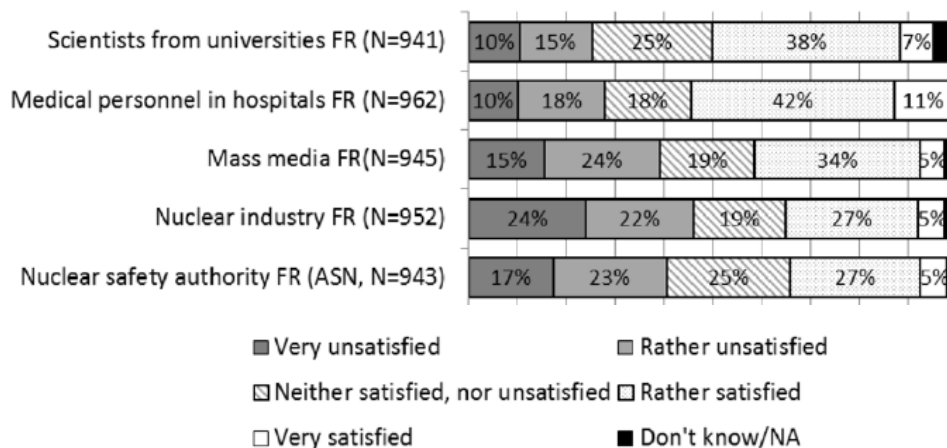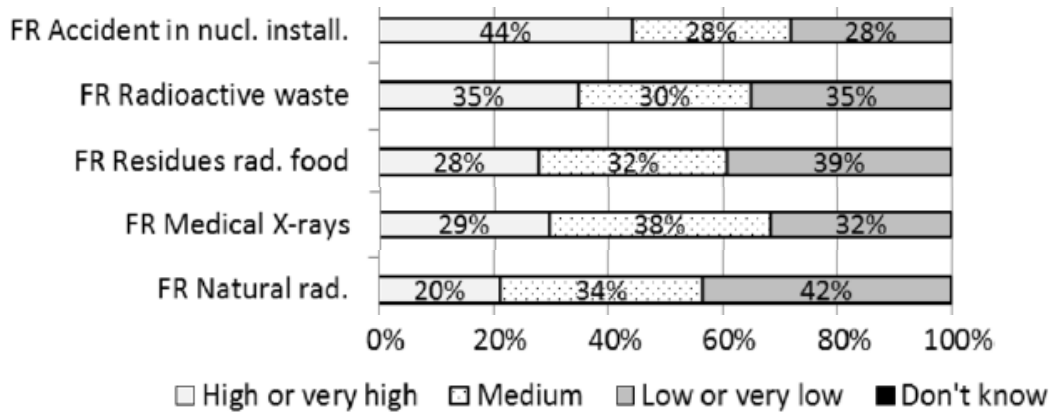

Source: *Journal of Radiological Protection* (2016).

Figure 3-3. Risk Perception on Various Radiological Risks
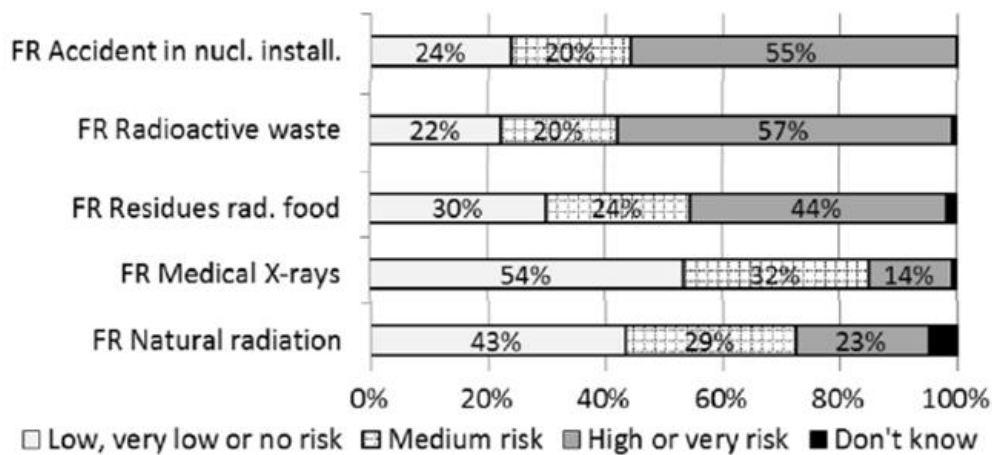
Source: *Journal of Radiological Protection* (2016).

Figure 3-4. Confidence in Authorities for Various Radiological Risks

Category	High or very high	Medium	Low or very low
FR Accident in nucl. install.	44%	28%	28%
FR Radioactive waste	35%	30%	35%
FR Residues rad. food	28%	32%	39%
FR Medical X-rays	29%	38%	32%
FR Natural rad.	20%	34%	42%

☐ High or very high   ☐ Medium   ▨ Low or very low   ■ Don't know

Source: *Journal of Radiological Protection* (2016).

According to local risk communication experts interviewed for this study, the people in France began to appreciate the importance of risk communication after the Chernobyl accident happened and it became necessary for children to take iodine tablets. Before that, receptivity to risks was not generally recognized and, as a result, people's tendency to over-react at the sudden presence of risks could not be denied.

As part of the communication strategy with the residents, there is a council (in addition to a CLI) that has member-environmentalists who engage in national debates. This council has been reported to relentlessly express its strong opinions on the performance of operators and publicize the results of its meetings, putting pressure in a good way on these operators. In France, all industrial projects that may have identified public risks—not just nuclear power generation projects—are always publicly debated upon.

Some experts opined that after over 30 years, the CLI has now become an important venue for power plant operators and residents to exchange opinions, and that the influences it exerts on the operators' safety code of conduct is immeasurable. However, there is also another sector that wonders whether a group such as the CLI—one that encourages diverse opinions, including that by environmentalists critical of nuclear power—can take root in Japan.

3.2 South Korea

1) Communicating with Citizens on Nuclear Power Generation

The nuclear industry in South Korea has learned from the accident at Fukushima Daiichi Nuclear Power Plant and from subsequent movements in Japan that maintaining safety is key to the sustainable use of nuclear power. It has also learned the importance of social receptivity. When evaluating power operators, the Nuclear Safety & Security Commission (NSSC), a regulatory body, also takes into consideration which nuclear operators and nuclear power plants are trusted by its citizens.

As a measure of the central government[2], the NSSC set up on 13 September 2013 a Regional Nuclear Safety Council in each area that hosts a nuclear power plant. This council aims to disclose information on the nuclear industry, including the operations of nuclear power stations, radioactive waste, measures for ensuring safety as well as to listen to residents' opinions. The 20-member Regional Nuclear Safety Council consists of NSSC staff, specialists from the Korea Institute of Nuclear Safety (KINS), municipality officials, and outside experts. Members have a two-year term. Many of the outside experts are university professors in fields others than nuclear engineering. Those experts trusted by the locals can serve for two consecutive terms. The safety council sets quarterly meetings, but calls for additional meetings when the NSSC and municipality deem it necessary. During these meetings, measures of power stations and safety regulation activities are outlined. Minutes of the meeting are also disclosed at the request of the municipality or outside experts.

2) Plant Operators' Own Communication Committee and Private Environment Monitoring Organizations

In September 2015, the Korea Hydro & Nuclear Power (KHNP) voluntarily set up a KHNP Nuclear Communication Committee (KNCC) at its headquarters and power plants. The KNCC at the headquarters consists of eight KHNP employees, including its CEO and board members, and outside experts (mainly university professors). Members convene quarterly or when they deem necessary. Outside experts have a one-year term, which may be extended. Fourteen outside

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[2] Based on the hearing on the Korea Hydro & Nuclear Power.

members from communities around the power plant's site are respected community residents such as the representative of the region, school teachers, parents, and famous environmental activists.

Meetings held every two months discuss the power plant's detailed operational data (including maintenance and repair of the plant, quantity of waste generated). While not all data are posted on the KHNP website, information disclosed to members participating in the KNCC is available even to non-residents.

In addition, there is the Environmental Monitoring Committee (EMC), an external audit organization wherein KHNP is not (cannot be) involved. This committee regularly sends data on the power plant to the environment monitoring centre of the region, which then analyses the information received. The regional centre can propose corrective steps to the municipality should it find information that may indicate a risk to the region.

The EMC's members are university professors or citizen groups with relevant knowledge and expertise. Officials of the power plant, including the plant superintendent, attend the EMC meetings but only as observers.

The first EMC goes as far back as 1998 in Kori. This was followed by new committees founded in Hanbit in 1999, Hanul in 2003, and Wolseong in 2007. South Koreans have been stricter with power plants since 2011, when the industry lost its credibility following a scandal surrounding a forgery of a warranty document. It is said that since 2012, the NSSC has made a rule not to grant KHNP permission to restart any problematic power plant that had been shut down as a consequence, unless the EMC and KNCC receive some indication that the locals still trust the operator. In addition, in the wake of the accident at the Fukushima Daiichi Nuclear Power Plant, the NSSC decided to use anonymous reports from citizens as bases for entering and inspecting a power plant when they deem necessary.

3) Public Opinions about Nuclear Power Generation

In 2016, the Korea Nuclear Energy Foundation (KNEF) conducted a regular survey on nuclear power, asking 1,009 people for their individual and general evaluation on five aspects: safety; use of nuclear power generation; operation of nuclear power generation; openness to the

prospect, possibility of reception of a power plant in their residential areas; and perceived credibility of nuclear power (KNEA, 2017). Respondents answered questions on a scale of one to five. The perfect score was 100.

a. General evaluation

The general evaluation on nuclear power generation scored 61.5 points, indicating that majority of the respondents supported nuclear power generation. Scores on the evaluation of nuclear power generation on five criteria were: 69.1 points for national interest; 67.8 points for necessity of nuclear power generation; 67.0 points for individual interest; 58.1 points for environmental affinity; and 56.6 points for safety of nuclear power generation. When asked about the most important indicator for evaluation, 55.3% replied 'safety of nuclear power generation' while 30.8% cited 'necessity of nuclear power generation'.

The general receptivity toward nuclear power generation garnered 50.9 points. On the receptivity per aspect, the score for use of nuclear power generation was 63.8 points; operation of nuclear power generation, 47.6 points; and installation of a facility in the area, 37.5 points. Credibility in the technology scored 60.9 points while perceived credibility of operators and the government were at 57.8 and 52.8 points, respectively.

b. Relation between evaluation of nuclear power and attributes of respondents

Based on the study on the correlation between attributes (residential area, academic background, sex, and household income) and respondents' knowledge and assessment of nuclear power, the followed were the findings:

(1) Respondents who were more knowledgeable about nuclear power highly rated nuclear power. The general evaluation score by those knowledgeable in nuclear power was 59.7 points, while that by the rest was 53.2 points.

(2) The study uncovered certain regional differences. While the nationwide general evaluation score was 61.5 points, the average score was 50.9 points in Busan, Ulsan, and Gyeongnam regions; and 48.2 points in Gangwon and Jeju regions.

(3) The higher the household income was, the higher the general evaluation score. Households with an income of less than W2 million gave 56.2 points. Those with W2 million to W2.99 million gave 59.9 points; those with W3 million to W3.99 million, 59.7 points; those with W4 million to W4.99 million, 63.2 points; and those with an income of W5 million or more, 63.3 points.

(4) Sex, academic background, and residential area were not highly correlated with the general evaluation of nuclear power although the tendency in responses to five items slightly differed. Environmental affinity got a score of 59.6 points among the males   and 56.7 points among the females. National interest earned 70.3 points from the males and 68 points from the females. Thus, males rate these two items slightly higher than females. In addition, national interest, individual interest, and necessity of nuclear power generation were rated higher by people with a higher academic background.

c. Comparison with results of past surveys

The Figure 3-5 shows that while 78.6% favoured nuclear power generation, the possibility of reception of a power plant in their residential areas was at 18.9%. A big difference remained between these two indexes since 2000. Those who affirmed the safety of nuclear power generation reached 52.6%, which is the same level as that in the survey before the accident at the Fukushima Daiichi Nuclear Power Plant in 2011.

In the recent survey, respondents who answered the same question and added that safety level is 'normal' accounted for 34.7%, while only 12.7% believed that nuclear power generation was 'unsafe'. This is a significant improvement from the results of the previous (2015) survey, where 57.9% had replied that nuclear power was 'unsafe'. Also, safety in waste management was concurred by 33.7% of the respondents—an increase from the 24% recorded in the previous survey (Figure 3-5).

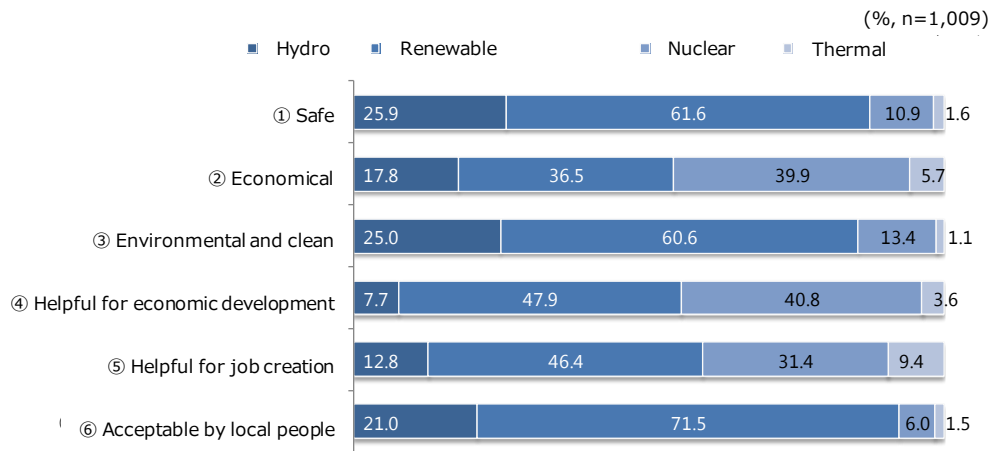**Figure 3-5. Trend of Five Major Barometers**
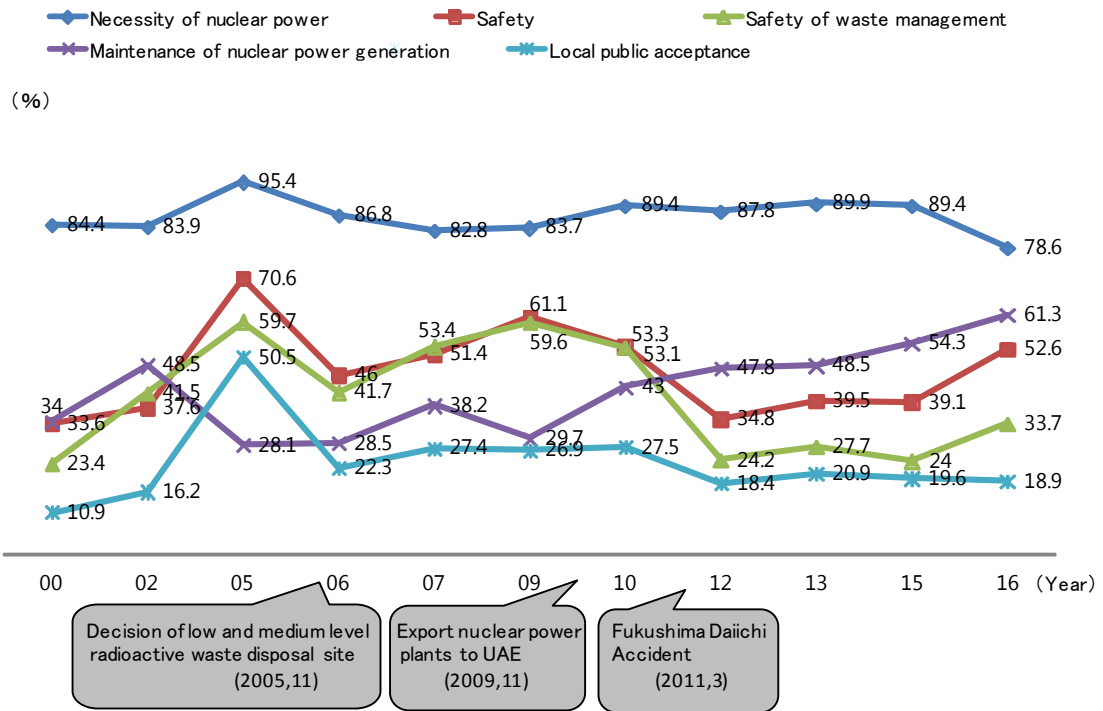
*The responses consist of four phases of evaluations up until 2015 and five phases of evaluations in 2016.
Source: Korea Nuclear Energy Foundation.

d. Evaluation of each power source

Respondents were asked about their most favoured power generation method—e.g. hydroelectric generation, renewable energy, nuclear power, and thermal power—under six evaluation indexes. In general, renewable energy (including hydroelectric) was favoured most, followed by nuclear power and thermal power (Figure 3-6).   When asked about the most inexpensive power generation, the size of respondents who gave 'nuclear power' and 'renewable energy' as answers was close at 39.9% and 36.5%, respectively.

Figure 3-6. Which Power Generating System Is the most Preferred Among ① to ⑥?

(%, n=1,009)

	Hydro	Renewable	Nuclear	Thermal
① Safe	25.9	61.6	10.9	1.6
② Economical	17.8	36.5	39.9	5.7
③ Environmental and clean	25.0	60.6	13.4	1.1
④ Helpful for economic development	7.7	47.9	40.8	3.6
⑤ Helpful for job creation	12.8	46.4	31.4	9.4
⑥ Acceptable by local people	21.0	71.5	6.0	1.5

Source: Korea Nuclear Energy Foundation.

e. Others

Findings on the rest of the questions are as follows:

▪ The level of knowledge on nuclear power generation tends to be high among males, or those with a high academic background or income. Many male respondents correctly answered all four questions about nuclear power generation. Those with a high academic background or income and those who were office managers or specialists correctly answered the questions relative to those from other educational background or income groups. On the other hand, many females and elderly housewives failed to choose the correct answers to all four questions.

▪ Renewable energy was believed to be the 'most inexpensive power generation method' by 36.5% of respondents, showing a gap between fact and perception.

▪ Media often used to gather information on nuclear power generation were television (88.1%), internet news (44.5%), other people (27.2%), and newspapers (17.1%), in that order.

▪ Respondents who said they had a negative opinion on nuclear power plants after the earthquake that hit southeast of South Korea on 12 September 2016 reached 38.9%. Meanwhile, 16.7% replied that their opinions on nuclear power plants 'changed to positive' after the earthquake and 44.4% did not change their opinions at all.

In regions other than Busan, Ulsan, and Gyeongnam, less than 40% replied that they 'negatively' changed their opinion. Thus, one can consider that the earthquake had little influence on the nationwide perception on nuclear power generation. In Busan, Ulsan, and Gyeongnam, however, 74.1% of respondents expressed their opposition to nuclear power generation after the 2016 earthquake struck South Korea.

Based on the study's results, the KNEF concluded that:

- The general evaluation on nuclear power is 61.5 points, indicating that most have a positive perception';

- 'Safety of nuclear power plants is the topmost concern of the nation; therefore, efforts to supply information on safety should be strengthened'; and

- 'Continuous flow of information is necessary as individuals with a deep knowledge of nuclear power tend to deepen their understanding further. Communication with the Busan, Ulsan, and Gyeongnam regions, where the general evaluation score was low, should be reinforced.'

f. What the survey result suggests

While results show that safety is a key concern and that communication should be done regularly, KNEF also got other insights on other indicators included in the study. By covering five areas of concern in its survey such as 'national interest', 'individual interest', 'necessity of nuclear power', 'environmental affinity', and 'safety', KNEF was able to identify the levels of importance respondents attach to each. In addition, by studying the perception by respondents' profile (i.e. by level of knowledge on nuclear power, academic background, sex, income, and place of residence), it was able to understand where and how its communication strategy should focus on.

One can further deduce that further analysis of the data through such methods as 'multiple regression' would prove that a uniform communication approach—such as explaining the safety of nuclear power to everyone in the same language or manner—would be ineffective. The KNEF concluded that focusing on Koreans with a low knowledge level (which the survey identified as those with a low academic background or income or are female) and enhancing their knowledge level on nuclear power should take precedence over explaining the safety aspect. Thus, information should be regularly and efficiently communicated through the media that the target audience often use.

3.3 Sweden

1) Communication Effort of Operators and Regulatory Bodies on Nuclear Power Generation

In Sweden, the Swedish Radiation Safety Authority (SSM) is the regulatory authority that regulates, authorizes, supervises, and makes proposals on nuclear safety, radiation protection, and non-proliferation of nuclear power. An example of SSM's role in the field of nuclear safety is its involvement in the decommissioning processes of nuclear facilities. Its interactions in the context of the decommissioning process include consulting with stakeholders in the review process, supervising parties to assure safety, providing input on decommissioning projects, and analysing impact of decisions taken by competent organizations (Carroll, 2016).

- Reporting on key decisions

    In a decommissioning process, the SSM invites opinions from a wide range of stakeholders through dialogues. It allows commentaries on issued primary reports, final reports, and decisions. It likewise reports all its activities and practices that are based on the proposals from the industry.

- Supervisory function

    The SSM supervises activities related to nuclear power to ensure that these are safely carried out. It establishes regulations, ascertains that all parties conform with the regulations and rules of conduct, inspects facilities and their operation, applies process improvements, as well as reports its decisions and proposals to the national government.

- Inputs and advices on external relations activities

    The body starts a dialogue with the plant operator before the operator files an application, reviews the application, offers official advices, including those on court rulings.

- Consideration of external relations activities

    The SSM considers the decisions made by stakeholders, although it need not provide any advice at this stage. Here, it is necessary to analyse the content to be agreed upon during the decision-making process and the implication of other organizations' decisions, since

what comes out of such an activity may have indirect impact on the planning and execution of decommissioning projects.

These SSM activities are performed while communicating to the public its functions as a regulatory body, laws and regulations on public disclosure, and available financial assistance or grants that allow for effective and active participation of stakeholders such as NGOs.

Meanwhile, Vattenfall, a state-owned nuclear power company in Sweden, believes that because it is part of a society, it should involve the participation of its various stakeholders in its daily operations. Such involvement is key to its success as a company (Vattenfall, 2017b).

Vattenfall supplies electricity to households, businesses, industries in cities. Because its operation can affect people and the environment, Vattenfall aims for 'understanding concerns of the people, finding optimum solutions, and interacting with people so that the business is accepted by the people in order to suppress negative influences of the business and maximize its positive influences'. Vattenfall interacts with the following stakeholders:

- **Employees:** All employees, including temporary workers

- **Customers**: Customers in all markets and segments

- **Suppliers:** Mainly primary suppliers, but secondary suppliers are also included

- **Plant owner:** The Ministry of Finance in Sweden

- **Market and investors:** Institutional investors

- **Authorities:** Regulatory and audit authorities

- **NGOs:** Non-governmental organizations concerned with environment and society

- **Large social communities:** Regional communities, universities, policy decisionmakers, etc.

The nuclear power operator sees the benefits of cooperating with regional communities. It understands that it is always responsible for the welfare and safety of its employees, citizens, and other related parties.

In fact, safety is one of Vattenfall's three core values (Vattenfall, 2017c). The operator pays attention to the 'health and safety of the employees, suppliers, and society'. it aims for a healthy

and safe workplace and takes systematic and proactive measures in accordance with OHSAS18001, a behavioural principle that includes awareness of health and safety, leadership, and culture.

Vattenfall stipulates a health and safety guideline as part of its safety measures (Vattenfall, 2016). In the long-term, the guideline aims to bring health risks and accidents in the workplace down to zero. To achieve this goal, Vattenfall requires its employees to be positive role models, fulfil their commitment toward health and safety, temporarily stop their work if in the presence of danger, exchange constructive information with each other, and regulate and report cases of harassment and bullying.

Vattenfall also points out that a clear and powerful leadership, best practice work processes that ensure a healthy lifestyle and safe environment, and abeyance to laws, regulations, and the Golden Rule are necessary. Its guideline identifies four way to ensure one's health and safety: (i) the presence of a nurturing leadership and culture; (ii) clear and consistent communication; (iii) use of a management system; and (iv) establishment and application of safety-related best practices, as well as of behavioural principles aligned with the guideline. Examples of behavioural safety principles are short-/long-term setting of (health) goals, planning and reviewing the goals, reducing risk by reporting occupational hazard incidents, and learning from experience.

2) Public Opinion about Nuclear Power Plants

In Sweden, a plan to gradually phase out nuclear power was formulated in the 1980 national referendum. However, public opinion leaned towards retaining the nuclear power plants. According to a public opinion poll conducted in 2004, only about 17% of the Swedes were in favour of phasing out nuclear power (World Nuclear Association, 2017).

By 2008, 40% of the nation favoured an expansion of the capacity of nuclear power facilities while 42% opposed the installation of new facilities but approved the use of existing ones. A public opinion poll conducted by Liberals in 2010 showed that 72% of the people favoured the government's decision to build a new nuclear reactor, while the remaining 28% opposed the decision. In the poll conducted by Social Democrats in the same year, 66% of the nation supported the new construction of a nuclear reactor. A third survey for that same year this time targeted representatives of industries that consume a large amount of electricity. Results

indicate that 30% was in favour of replacing the nuclear reactors while 22% approved the expansion of the facility's capacity and 45% supported a phase out of nuclear power.

The Novus Poll conducted a poll right after the accident at the Fukushima Daiichi Nuclear Power Plant in 2011. Results indicate that 33% supported the continuation of nuclear reactors' operation and replacement of existing reactors while 36% agreed that the use of existing reactors should continue, and 24% was in favour of phasing out nuclear power. The October 2013 survey conducted by the same company further shows that 35% was in favour of the use of nuclear reactors, including replacement of existing reactors; 33% agree to the simple use of existing reactors; and 22% concurred with the phase-out.

These series of surveys indicate that the gradual phase-out of nuclear power, which was approved by majority during the national referendum in 1980, did not get much support today. Also, those who were in favour of the continuous use of nuclear power—including replacement of existing reactors—prevailed even after the Fukushima Daiichi Nuclear Power Plant accident. While the results of the polls in 2008, 2010, 2011, and later cannot be simply compared because they had different poll questions or covered different populations, the trends in the results were similar. That is, despite the differences in poll choices and populations, results suggest that a broad range of people support the use of nuclear power in Sweden.

3.4 Switzerland

1) Communication on Nuclear Power Generation

In Switzerland, a national referendum seeking 'nuclear moratorium' was adopted in 1990 after the Chernobyl accident, and plans to construct new nuclear power plants were frozen until 2000. When the concern over the shortage of electricity supply rose later, the federal government amended the Nuclear Energy Act in 2005, lifting the indefinite suspension on existing nuclear power plants and the freeze on new construction of nuclear power plants.

After the accident at the Fukushima Daiichi Nuclear Power Plant in 2011, however, new construction of nuclear power plants was frozen because the people wanted lower risks in nuclear energy use. The public again wanted nuclear power abandoned, and the expansion of the use of nuclear power was likewise halted repeatedly.

Nuclear power is an important power source in Switzerland, second only to hydroelectric power. It accounts for 35% of the total electricity domestically generated (2015). The government and operators recognized the importance of nuclear power generation and took significant steps to communicate with the nation on the safety of nuclear power plants in the country. As a result, the Swiss had a higher understanding of nuclear power generation[3].

The nuclear power law of Switzerland requires the Swiss Federal Nuclear Safety Inspectorate (ENSI), the country's regulatory body, to regularly deliver information to the public and accommodate questions on the safety of nuclear power from Congress. Materials prepared by ENSI after 1 June 2006 have been made public, with some exceptions due to security and private information concerns in accordance with the Freedom of Information Act (ENSI, 2016).

The main communication activities are periodic dialogues with stakeholders, press conferences with media and journalists, final nuclear waste disposal site selection events, as well as technical forums on nuclear power plants started by ENSI in 2012. The forum would generally consist of the following:

- Platform for transparent and deep discussion about the technological and safety issues concerning operations of nuclear power plants;

- Participation from owners and plant operators, licensees, states, municipalities, interest groups, experts, and political representatives from Switzerland as well as neighbouring regions such as Germany.

Questions raised at the forum and corresponding answers were shared with the general public as well as the forum participants to aid them in forming their opinions.

The ENSI invites participants to the forum, which happens two or three times a year or upon request.

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[3] The Nikkan Kogyo Shinbun, LTD. 'The Nuclear Almanac 2017', etc.

Figure 3-7. The ENSI Technical Forum

Source: ENSI Website

Every power plant and operator also has its own communication activities. For example, in 2015, Kernkraftwerk Gösgen (KKG) and its Gösgen power plant accepted more than 13,000 visitors from 710 groups (KKG, 2017a). By the middle of June that year, KKG held a four-day course on energy topics for school teachers. In December, it updated its brochure, 'Gösgen Nuclear Power Plant – Technology and Operation', and allowed its website visitors to download its French, Italian, and English versions. The KKG also held a periodic deliberation in January and December, inviting representatives from the municipalities of Däniken, Gretzenbach, Obergösgen, and Niedergösgen and providing information on emergency preparedness as well as KGG activities and facilities in Solothurn.

2) Trend of Public Opinion Before and After the Fukushima Daiichi Nuclear Power Plant Accident

Figures 3-8 and 3-9 show the results of a public poll conducted on more than 2,200 participants every year in Switzerland (KKG, 2017b). Figure 3-8 shows respondents' reply when asked whether safety has been enhanced at existing nuclear power plants in Switzerland.

The percentage of 'I don't think so' responses rose by about 15% in 2011 after the accident at the Fukushima Daiichi Nuclear Power Plant took place but declined over the next two years. Such is indicative of KKG's progress in enhancing its target audience's understanding of plants' safety capability after the Fukushima accident. It should be noted that the percentage of 'I think so' responses is as high as about 80%.

Figure 3-9 pertains to the response to a question on the cost of nuclear power generation. The number of respondents who thought it was 'inexpensive' have increased since 2008, exceeding by about 30 points those who thought it was 'expensive' in 2013 (after the Fukushima Daiichi Nuclear Power Plant accident). These results confirm that perceptions about nuclear power's safety capability and economy have not been lost even after the Fukushima accident.
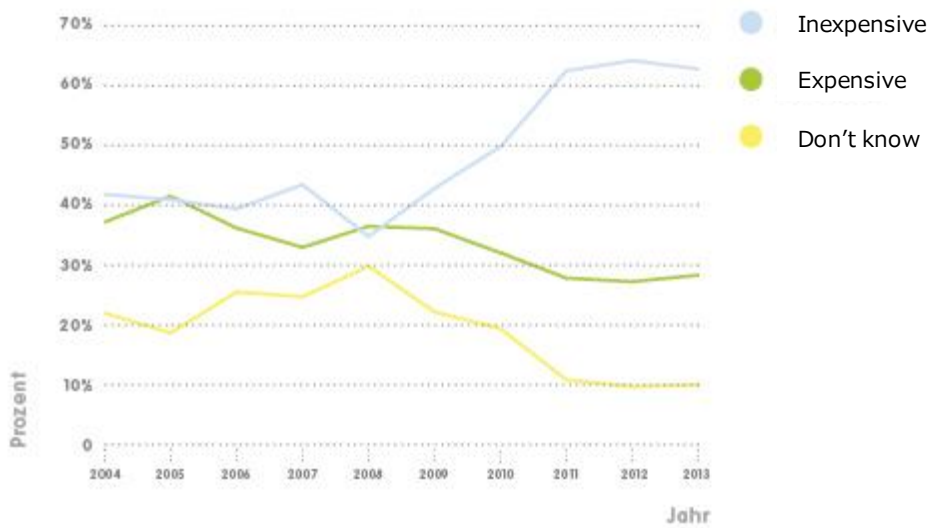
Figure 3-8. Is Safety Enhanced At Existing Nuclear Power Plants in Switzerland?
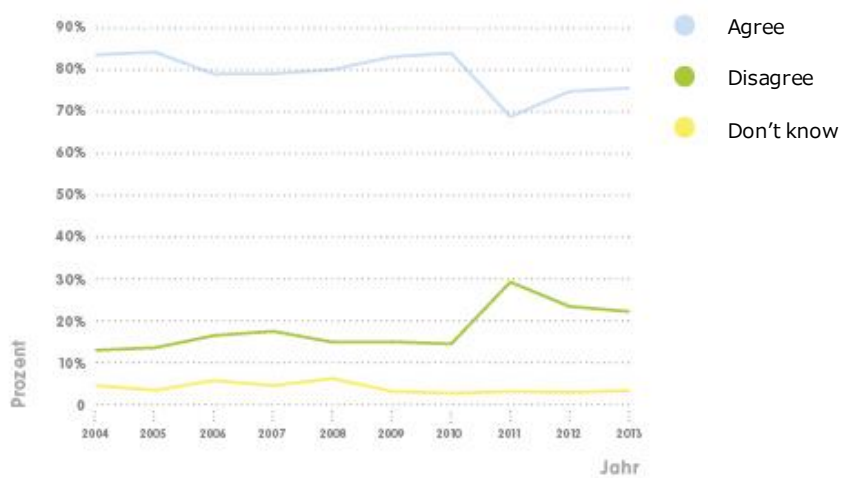
Quelle: Swissnuclear

Source: Kernkraftwerk Gösgen Website.

Figure 3-9. Is the Cost of Nuclear Power Generation Inexpensive?

Source: Kernkraftwerk Gösgen Website.

3.5   The United Kingdom

1) Communicating with Host Municipality and Residents About Nuclear Power Generation

In the United Kingdom, a stakeholder group meeting is periodically held as a venue for communication between operators of the nuclear power plant and various parties in the municipality.

The Site Stakeholder Group (SSG) is a council called upon to discuss issues on the nuclear power facilities owned by the United Kingdom's Nuclear Decommissioning Authority (NDA). There are 16 SSGs throughout the United Kingdom.

In areas hosting a nuclear power plant run by private operator EDF Energy, a council called a Local Liaison Committee (LLC) or a Local Community Liaison Council (LCLC) is organized. In areas where an NDA site is located side-by-side an EDF site such as in Sizewell (county of Suffolk, England), a common stakeholder group exists (Sugawara, 2013). Some stakeholder groups have sub-groups that discuss in detail such topics as emergency preparedness. For example, the

stakeholder group of Dounreay (2009) has three sub-groups that discuss issues of restoration of the site, business, and social economy.

Table 3-1. Comparison of SSG and LCLC

	SSG	LCLC
Guideline	NDA guideline (No legal obligations)	None in particular
Chairperson	・ Except NDA; Site Licence Company's (employer) employee has no conflict of interest, etc. ・ Mainly, a person from the local government (Person with experience as head of local autonomy)	・ Served by EDF Energy ・ Mainly manager of power facilities
Secretariat	・ SLC appoints staffs ・ Tasks: Arranges schedules, drafts minutes, controls budget, manages business trips, manages the website of SSG, etc.	EDF Energy appoints staffs
Members	Environmental groups; local government executives; representatives from commercial and industrial associations, tourism associations, agricultural unions, churches, disaster prevention agency, medical and welfare staff, etc.	
Budget	NDA	EDF Energy
Meeting	Four times a year～＋subcommittee	Twice a year～＋subcommittee
Main Subject	・ Site environment remediation while decommissioning ・ future vision for the region while/after decommissioning	Safety issue during plant operation

Source: Sugawara (2014), 'Involvement of stakeholder at local region – example of overseas', 29th Atomic Energy Commission, 2 September 2014.

a. Outline of stakeholder group meeting

Both SSGs and LCLCs are voluntary organizations that are not obligated by law to be set up but are now present in all nuclear power facilities, including military sites, in the United Kingdom. Their basic functions are: (i) monitoring the safety and environmental impact of the facility on the community; (ii) providing information on the operating conditions of the facility; (iii) consulting with representatives of the host location[4]; and (iv) engaging in discussions on the

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[4] The SSG may pursue discussions on policy directions of the government and strategic development of

social and economic situation of the region.

Site Stakeholder Groups are required to follow the guideline from the NDA. This guideline enumerates the main purposes of SSGs: (i) to provide opportunities to direct questions to the plant operator, NDA, and regulatory bodies on behalf of the community; (ii) to offer comments on the operation as well as future plan of the site; and (iii) to echo the opinions of the community, giving advices to the NDA, operator, and regulatory body.

The NDA guideline clearly states that SSGs are not decision-making bodies. The operating costs of SSGs are shouldered by the NDA, while those of LCLCs are borne by EDF Energy.

b. Constituents of stakeholder group meeting

Each SSG, as prescribed by the NDA guideline, consists of members and advisors. Members are representatives from the host region who regularly participate in meetings and have voting rights over decisions on SSG operations. These include politicians, environmental groups, and non-profit organizations in the region. They number from 20 to 30, including the chairperson and vice-chairperson. The chairperson of an SSG must not be an employee of the NDA or operator. Any violation of interests are required to be made public.

Advisors do not hold voting rights. They are stakeholders such as representatives of regulatory bodies and unions who often participate in meetings, representatives of the NDA and the plant operator, and administrative officers of the municipality.

An SSG represents its main constituents: churches, commercial and industrial associations, environmental groups, agricultural unions, tourism associations, and labour unions, etc.

The structure of LCLCs is almost the same as that of SSGs. Both the LCLC chairperson and secretariat are served by the EDF Energy manager. Members participating in a sub-group are flexibly selected, depending on the agenda. If the agenda is on disaster prevention, for example, the members are selected based on the planned range (1 to 3 kilometres in the case of a gas furnace). If it is about local economy, they are selected based on the commutable area (travel-to-work area).

c. Main activities of stakeholder group meeting

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the NDA.

Specific activities of both SSGs and LCLCs include 'regular meetings' and 'consultations'. They may also engage in formulating an emergency plan. The regular meeting of an SSG or LCLC is a venue where a question-and-answer session is held in response to a report by the operator or regulatory body concerning the operating condition or trouble at the facility. A subcommittee may be set up under the management of a committee so as to have intensive discussion on issues the hosting region takes a high interest in. As a channel for consultations, an SSG or LCLC also functions as a venue for the NDA to seek opinions from the host region when deciding on an operational strategy. For instance, the government and the plant operator engage in a dialogue with the host region about nuclear policy measures, and stakeholders participate in the advance evaluation of an operation plan.

Another committee that intensively discusses economic and employment problems is also installed in the plant's host site under the NDA's management. This is because there are many nuclear power plants scheduled to be decommissioned in the United Kingdom. Therefore, the economic impact of decommissioning a nuclear facility are strong concerns in a region affected. It is this same committee that periodically assesses/predicts the economic benefits an existing/new nuclear power facility has brought (will bring) to the host region, and talks about areas where investment is deemed necessary and about specific business operations. In some cases, an SSG requires the input of the plant operator or the NDA when determining the 'benefit packages' of a newly constructed facility.

d. Efforts by industry in coordination with the government

The Nuclear Industry Council (NIC) can be cited as a by-product of the coordination efforts between the British government and the nuclear industry. The council was started in February 2013 as a central concept of the 'Nuclear Industrial Strategy' put forward by the Department of Energy and Climate Change (at that time) so as to supply high-level strategic policies to the British nuclear industry.

The predecessor of the NIC was the Nuclear Development Forum (NDF), which was established to build trust in the construction of new nuclear power plants and to provide an industrial forum that will encourage the British government to implement activities that promote the 2008 White Paper on Nuclear Power. As the NIC started, the activities of the NDF were realigned under the management of the NIC.

The government and industry jointly chair the NIC with senior representatives of the nuclear industry such as developers, vendors, operators, suppliers, contractors, and labour unions as participants. The NIC aims

- to play a leading role as a collaborative organization of the British nuclear industry and government and to supply a forum for dialogues within the industry;

- to formulate and maintain a single and consistent strategy and vision for the British commercial nuclear industry that will guide the government and operators' decisions;

- to agree with, supervise, and implement programs at home and abroad so as to enhance the capability and competitiveness of the British nuclear industry;

- to support actions necessary to operationalize the long-term vision of the industry or the government, in cooperation with research communities and the industry.

In December 2015, the NIC (2005) published the 'Nuclear Energy and Society – A Concordat for Public Engagement', enumerating the commitments of the nuclear department to engage with society over nuclear-related matters under the following four principles:

- **Principle 1: Leadership commitment**

Companies working in the United Kingdom civil nuclear sector recognize the importance of public engagement.

  ➢ "We take the society's attitude towards nuclear energy seriously and give a high priority to public engagement across our organization."

  ➢ "We incorporate public engagement into the strategic or operational plan of our organization."

  ➢ "We encourage our employees to engage with society and supply leadership and resource necessary for them to do so."

- **Principle 2: Best practice**

  Engagement with citizens has the following features:

  ➢ **Dialogue**: "We evaluate bidirectional communication and listen to the voices of the citizen."

➢ **Trust**: "We express our respect and try to build trust by the citizen by making public and transparent the issues we face and actions we take against them."

➢ **Clarity**: "We ensure that public engagement has features of being written or spoken in plain language and having clear and concise information without contradiction."

➢ **Consultation**: "We listen to the opinions of communities and proactively consult with the communities (especially when our activities influence their daily lives)."

- **Principle 3: Effective communicators**

Employees are recognized as 'ambassadors' of the sector and that independent experts and leaders of the industry play an important role in communications:

➢ "We promote public engagement within our organization and reflect it on our staff policies."

➢ "We support engagement between our employees and the citizen by supplying appropriate training, resource, and opportunities."

➢ "We act to nurture individually and collectively to build understanding and awareness of the positive impact of our sector on society."

- **Principle 4: Making a Difference**

The nuclear department recognizes the importance of the attitude of the citizen towards nuclear energy and periodically evaluates progress in fostering engagement with society:

➢ "We evaluate public opinion surveys relevant to our business and seek to better understand society's attitude towards civil nuclear energy."

➢ "We review and continuously improve our public engagement programs, building our successes and learning how to be more effectively."

➢ "We work together to collaborate in public engagement and share good practice."

2) Public Opinion on Nuclear Power Generation

Ipsos MORI, a research company in the United Kingdom, has long been conducting public opinion surveys on the nuclear power industry and nuclear energy in the United Kingdom for the Nuclear Industry Association. On 7-13 December 2012, Ipsos MORI conducted a survey among 1,046 respondents on 126 sampling points (automatically selected) all over the United Kingdom (Ipsos MORI, 2013). Data were weighted to represent the population of 16 years old or older all over the United Kingdom. In its paper published in February 2013, 35% of the respondents who were asked the question, 'How favourable/unfavourable is your overall opinion and impression on the nuclear industry/nuclear energy?[5] were in favour. Meanwhile, 18% were against nuclear energy. Both the size of the affirmative and negative responses declined compared to that of the previous year (Figure 3-10).

Figure 3-10. How Favourable or Unfavourable Are Your Overall Opinions Or Impressions on the Nuclear Industry/Nuclear Energy?
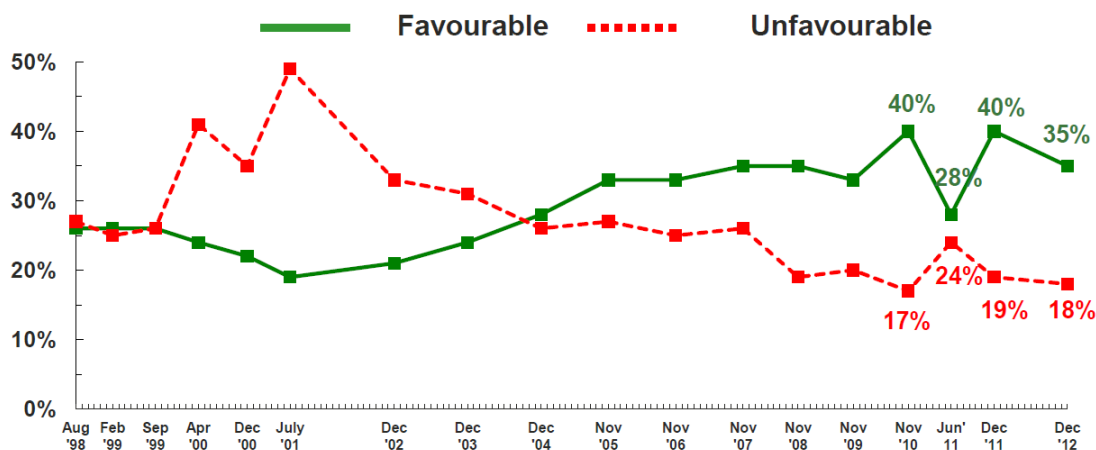
Source: Ipsos MORI, Nuclear Update, December 2012.

A survey done right after the 2011 Fukushima Daiichi Nuclear Power Plant accident showed that

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[5] Respondents selected their answers from the following; Very Favourable, Mainly Favourable, Neither Favourable nor Unfavourable, Mainly Unfavourable, Very Unfavourable, and No Opinion. (https://www.ipsos-mori.com/Assets/Docs/Polls/ipsos-mori-nuclear-energy-poll-tables-december-2012.pdf).

the points of those of gave a 'favourable' reply substantially declined. In December of the same year, however, it should be noted that the percentage recovered to the level before the accident. Although the result of a survey in December 2012 showed that the percentage of 'favourable' replies decreased, the 'unfavourable' response did not increase.

Note that during the periods December 2000 to July 2001, when the 'unfavourable' opinions substantially increased, seven nuclear incidents occurred, all of which were rated Level 1 by the International Nuclear Event Scale (INES) (Office for Nuclear Regulation, 2001). In particular, three nuclear incidents occurred at the Sellafield site of the British Nuclear Fuels (at that time): (i) In October 2000, there was a loss of power supply to major parts of the site due to a defect in a new section of a 11-kV switching equipment; (ii) In March 2001, there was a plutonium contamination in the workplace while gloves were being replaced at the plutonium reprocessing department of the B205 magnox reprocessing plant; and (iii) In June 2001, local flooding with a depth of 10-15   centimetres occurred outside the research facility, with water getting into the premises. These circumstances were considered to have caused the shift in public opinion.

The Department for Business, Energy and Industrial Strategy (2017) also surveyed the public's opinion after the Fukushima Daiichi Nuclear Power plant accident and made its result public (Figure 3-11). This survey was conducted on 14-18 December 2016 among 2,138 respondents 16 years old and above. It used a random sampling method throughout the United Kingdom (weighted data). The survey results, published in February 2017, showed a slight shift in both the affirmative and negative responses to the question, 'Do you support or oppose use of nuclear power generation in the United Kingdom from what you know or have heard of?' but almost no change in the overall trend. The percentage of people who neither support nor oppose the use of nuclear power generation reached the highest level in the past, while 36% approved and 20% opposed. Households with an income of £50,000 or more (43%), male (47%), belonging to social grades[6] A and B (45%), and are 65 years or older (43%) tended to favour the use of nuclear power.

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[6] Social Grades by National Readership Survey: A - Higher managerial, administrative and professional; B - Intermediate managerial, administrative and professional; C1 - Supervisory, clerical and junior managerial, administrative and professional; C2 - Skilled manual workers; D - Semi-skilled and unskilled manual workers; E - State pensioners, casual and lowest grade workers, unemployed with state benefits only.

Figure 3-11. Public Opinion Survey by Business, Energy and Industrial Strategy
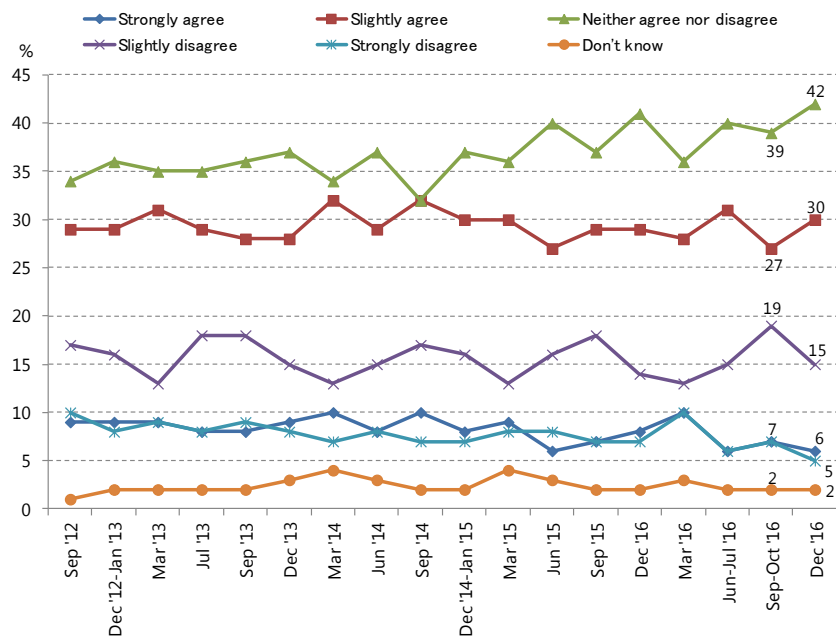
3.6   India

Based on the Russia-India nuclear cooperation agreement, the construction of VVER, which are Russian light water reactors, began in 2002 at the Kudankulam site. Kudankulam Unit No. 1 (1 million kW, VVER) started operating in December 2014. Unit No. 2 (1 million kW, VVER) started generating power in August 2016. Construction of Unit No. 3 and 4 (1 million kW × 2, VVER) started in October 2016. However, the projects encountered hiccups as protest movements rose throughout the construction period of Kudankulam Units No. 1 and 2.

Several months after the Fukushima accident occurred in March 2011, the protest movement led by a strong opposition leader, S.P. Udaykumar, suddenly gathered momentum among local communities in Kudankulam.

Concerned that the protest will escalate similar to the scenario in Jaitapur, India (where protesters clashed with the police, with one protest leader dying in the process), the Indian government commenced investigation on the source of the Kudankulam projects' funds. Additionally, the local municipality of Kudankulam decided to suspend the construction work

until the Indian government could explain the safety of the plant, which irritated Russia and led the Indian government to find the source of the protests. In an interview with the scientific journal *Science* in February 2012, India's Prime Minister Manmohan Singh said, 'There are NGOs, often funded from the United States and Scandinavian countries, which are not fully appreciative of the development challenges that our country faces.'[7]

In a way, these protest movements produced some positive effects. Because of the strong protest movement at Kudankulam, pro-nuclear advocates in India started serious discussions and began to recognize the need for credible public opinion surveys.

Some knowledgeable sources point to political interests as the cause of anti-nuclear activities at Kudankulam. Dr. Sitakanta Mishra, who teaches International Relations at the Pandit Deendayal Petroleum University, stated in a 25 January 2017 article in the *Russia & India Report*:

> Evidently, sporadic opposition to nuclear projects and its politicization started in 1988 when the local population and environmental groups opposed the Kaiga project in Karnataka. [...] Pockets of resistance, and futile attempts to paint nuclear projects with political color, are nothing new in India. What is annoying is the self-proclamation of sporadic opposition as the 'anti-nuclear movement of India' when there is no pan-Indian movement at all. Neither is there any visible 'green politics' in the Indian political mainstream, unlike in Europe. What is unfolding rather is the deliberate attempt by domestic disgruntled groups to shackle India's upswing nuclear energy drive when the Indo-U.S. nuclear deal has unshackled it from the global technology denial regimes.'

In 1989, Dr. Shivaram Karanth, the protest leader, stood as a candidate in the parliamentary election but was eventually defeated. Later, S.P. Udaykumar, the Kudankulam protest leader, also ran during the parliamentary election as an Aam Admi Party candidate. However, Udaykumar later quit the party because Aam Admi Party Leader Arvind Kejriwal allegedly told him that 'the middle class may not support you if you take a stand against the nuclear plant since they see these as employment opportunities for their children.' Udaykumar then launched his own political party named *Pachai Tamizhagam* (Green Tamil Nadu) and started political activities

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[7] As reported in the *World Nuclear News*, 'Singh: Foreign groups behind anti-nuclear protest', 24 February 2012.

using the anti-nuclear policy as its platform.

While there are others like Arvind Kejriwal who believe that most Indians are not against nuclear energy, there is a deliberate attempt by domestic disgruntled groups to 'shackle India's upswing nuclear energy drive', and the Russian-built Kudankulam Nuclear Power Project is bearing the brunt of this negative campaign.

India's case is interesting as it demonstrates how protest activities against nuclear facilities can be affected by largely political issues rather than by lack of information or communication among stakeholders.

3.7 Organisation for Economic Co-operation and Development and Nuclear Energy Agency

Aside from the country initiatives, international organizations have their own experiences on how to gain public acceptance for nuclear power projects.

1) Study on General Public and Stakeholder Involvement in the Management of Radioactive Waste

The Organisation for Economic Co-operation and Development Nuclear Energy Agency (OECD/NEA) conducted a study on stakeholder involvement in the radioactive waste management and released the report, 'Stakeholder Involvement in Decision Making: A Short Guide to Issues, Approaches and Resources' (hereinafter referred to as the SI Report). The SI Report aims to support practitioners of stakeholder involvement, outlining the steps and issues associated with the process.

a. Necessity of stakeholder involvement

Radioactive waste management issues are embedded in societal issues such as the environment, risk management, sustainability, energy, and health policy. In all these fields, there is an increasing demand for stakeholder involvement, participation and engagement by sharing information, consulting, engaging in dialogues, or deliberating on decisions. Stakeholder involvement should always be seen as a meaningful part of formulating and implementing good

public policy. Its approaches should not be viewed as convenient tools for public relations, image building, or winning acceptance for a decision taken behind closed doors.

When convening a stakeholder involvement initiative, it is usually necessary to identify the right target population. This target population may be very broad in the early stages of decision-making but could be narrowed down as projects progress. Stakeholders have different contributions to make and different involvement needs at each stage of a decision-making process. The definition of 'community' could include different criteria such as spatial or geographic, political, economic, cultural and emotional criteria. When considering which stakeholders to engage with, the planner should, at the minimum, identify institutions or groups where the organization has legal, financial or operational responsibilities.

Not all forms of participation are alike. Different levels of stakeholder participation or involvement are offered through different approaches. One simple approach may be to transmit information to a passive stakeholder audience; another approach may significantly empower stakeholders within the decision-making process. There is a clear trend towards higher levels of engagement by organizations seeking win-win outcomes with a diverse set of stakeholders. Table 3-2 describes how a given level of involvement may be chosen according to the situation or to the objectives sought.

Table 3-2. A Public Involvement Continuum, the Level of Expected Outcomes, and the 'Promise' Made by the Convener

Low level of public involvement or influence		Mid-level	High level of public involvement or influence	
Inform	**Consult**	**Engage**	**Collaborate**	**Partnering**
Inform, educate, share or disseminate information	Gather information, views	Promote two-way dialogue	Commit to frame issues and debate options together	Partner in selecting and implementing solutions
Increasing literacy; inducing behavioural changes	Modifying policies in accordance with public preferences and/or reaching an informed consent		Obtaining the self-commitment of each participant as well as contributions that may result in binding processes and decisions	
"We will keep you informed"	"We will keep you informed, listen to you, and provide feedback on how your input influenced the decision"	"We will work with you to ensure your concerns are considered and reflected in the alternatives, and provide feedback on how your input influenced the decision"	"We will incorporate your advice and recommendations to the maximum extent possible"	"We will implement what we decided together"

Source: Organisation for Economic Co-operation and Development Nuclear Energy Agency, 'Stakeholder Involvement in Decision Making'.
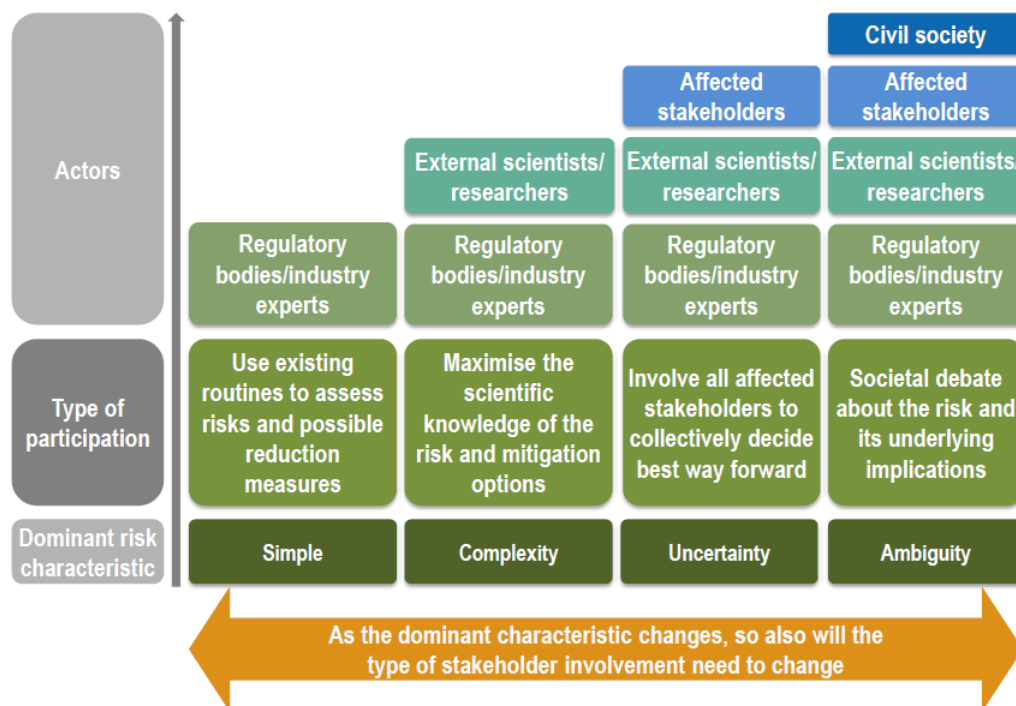
According to international guidance and best practice publications, stakeholders should be involved early on to ensure the effectiveness and validity of process. 'Early' here means the upstream principle stage that serves as the foundation for framing the issues and considering individual tasks, while options are still wide open. Early involvement also means engaging a wide range of interested and affected parties in formulating the issues for consultation, evaluation, or decision, to the extent possible in a given context. Today, even high-level intergovernmental processes are influenced by broad-based stakeholder input at an early stage.

Planners should be aware that stakeholders may desire, expect or be entitled to a particular level of involvement. Preliminary discussion will help determine the appropriate level. How much involvement the organization may make, how information obtained from the engagements affects the decision-making process, and what can be constraints in doing so, must be clearly defined. In statutory processes, such as those conducted under the Aarhus Convention, accountability is an important requirement. The convener is accountable—i.e. is required to

show how the input has influenced the decision-making process—and stakeholders have a right to verify this information.

Figure 3-12 shows how stakeholders participating in risk management or the method of participation changes according to the characteristics of dominant risks. The figure indicates that a different set of procedures and a larger set of actors are needed to respond as dominant risks become more complex or uncertain. For 'ambiguous' issues, broader as well as higher-level involvement is justified, so as to reveal the competing perspectives and concerns.

Figure 3-12. The Risk Management Escalator

| Actors		Civil society
	Affected stakeholders	Affected stakeholders
External scientists/ researchers	External scientists/ researchers	External scientists/ researchers

Source: Organisation for Economic Co-operation and Development Nuclear Energy Agency, 'Stakeholder Involvement in Decision Making'.

b. Planning the stakeholder involvement process

In planning, executing and evaluating a stakeholder involvement initiative, a cycle of effective engagement that moves from strategic thinking; analysis and planning; strengthening engagement capacities; designing the process and engaging stakeholders; and finally acting,

reviewing and reporting, is used (Figure 3-13). This reflects the fact that radioactive waste management is a long-term endeavour, and that there is that possibility of needing to overturn or agilely correct decisions at any point of the engagement framework.

Figure 3-13. Five-stage Stakeholder Engagement Framework
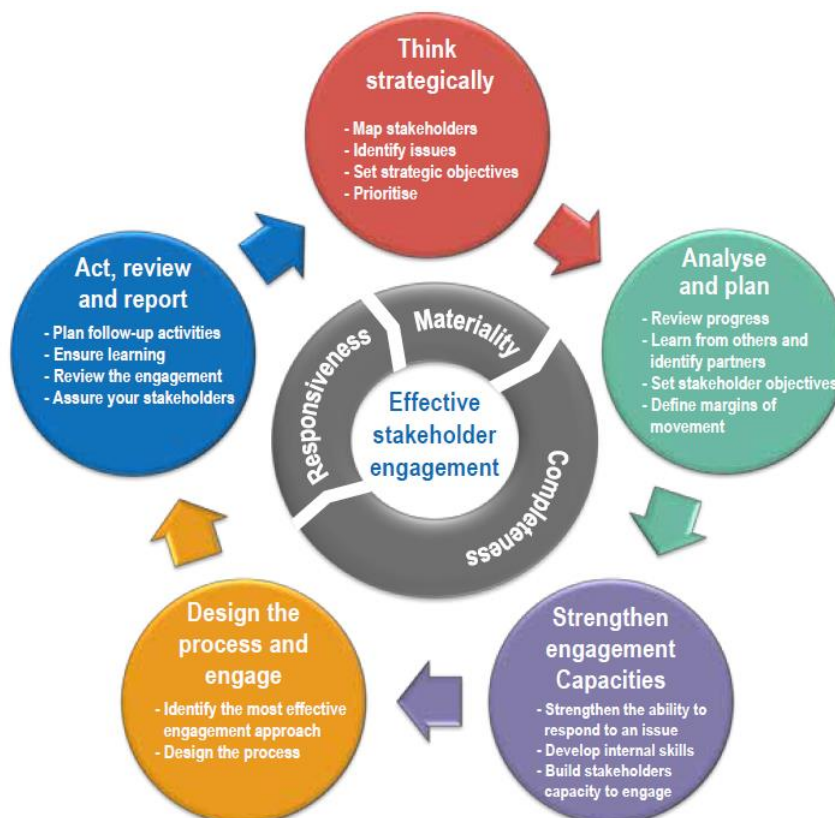
Source: Organisation for Economic Co-operation and Development Nuclear Energy Agency, 'Stakeholder Involvement in Decision Making'.

Stakeholder involvement approaches vary. No particular approach can be considered superior to another. To select the appropriate stakeholder involvement approach and be able to evaluate whether the selection was appropriate after executing the engagement plan, the convener must specify first the overall objective of its initiative and the selection criteria. Handbooks and online platforms have resources that can help the convener match approaches to the basic selection criteria identified by the organization.

These approaches on stakeholder involvement are listed below, with those at the bottom generally requiring higher involvement. Note though that this list is by no means exhaustive. In addition, regardless of the characteristics of the approach, each needs to be adapted, in practice, to given circumstances.

- Public hearings

- Deliberative polling

- Focus groups

- Nominal group process

- Delphi process

- Charrette

- Citizen advisory groups

- Consultative groups

- Multi-actor policy workshops

- Round tables

- Citizen task forces

- Study circles

- Co-research groups

- Scenario workshop

- Referendum

- Consensus conferences

- Citizens' juries

- Citizens' panels

- Local monitoring, oversight and information committees

- Partnership arrangement for participatory site selection

Approaches that are more appropriate for 'alternative dispute resolution' or for cases where discussions involve competing interests include:

- Policy dialogues
- Regulatory negotiation or negotiated rule making

c.   Implementation and assessment of involvement

Guides on how to effectively implement include 'best practice' tips, flow charts, and worksheets that can be printed. Discussions on actual use cases are, however, beyond the scope of this short guide. In general, the tasks involved in the implementation stage include sending invitations to stakeholders, setting the venue and time, preparing pre-event information, building participants' capabilities on the complex decision-making processes, checking travel routes and logistics, setting basic house rules and work procedures for participants, facilitating the proceedings on the day itself, recording the event, and applying quality assurance.

Post-hoc assessment of initiatives on stakeholder involvement is essential to improve the next initiatives. Goals and outcomes should be measurable or at least listed and clarified so that the different participants (stakeholders and conveners alike) can assess the process. Also, goals and outcomes largely vary depending on the expected effects on the stakeholders' interest or involvement. The criteria for success need to be specified within a given range. Examples of criteria are: whether compliance with statutory requirements was achieved; whether the decision-making process gained credibility; whether input from stakeholders was of high quality; or whether some democratic process in the deliberations was put in place.

d.   Area for future development

- The new media context

Recent international events have proven that social media is changing the communication and participation context, especially among the younger generation. The process of involving stakeholders has, in fact, already leveraged on these developments in the way it informs and consults. The next steps would be to use social media so as to attain a higher degree of involvement in the decision-making process. Relevant institutions need to monitor evolutions, and learn to reason and respond in new ways.

- The evolving participation context

Traditionally, public participation has been viewed as an institutional process following a subscribed procedure during a limited window of time. On the other hand, the Aarhus Convention has introduced participation as a continuous process—which now sets new demands on relevant organizations. At the same time, civil society is gaining autonomy and coming forward to propose its involvement in issues it deems important. In the future, stakeholder engagement will probably need to push for a solid democratic culture among the populace and to support civil society representatives in ongoing knowledge-, competency- and capacity-building initiatives.

- The increasing importance of political commitment, innovation, and advocacy

In today's societies, merely changing scientific variables in public policy-making does not have the power to make the necessary changes. Nowadays, political deliberation and democratic interaction are key to a truly successful decision-making process.

- Continued relevance and recognition of ethical dimensions

On radioactive waste as a problem, legitimate and defensible policies must take into account important ethical issues, along with stakeholders' interests and scientific and technical solutions.

- Addressing participants' varied standards of accountability

In a participation process, stakeholders may differ in their standards on responsibility and accountability. For instance, one national institution may be expected to hold to a very high standard the principles of truth, accuracy, and verifiability of information in an engagement process. In contrast, non-institutional stakeholders participating in an open consultation are not required by any regulatory body to apply the same standards.

Another example is when some participants in the engagement process take advantage of the platforms available at their disposal, particularly new media, to broadcast their own interpretations of a circumstance and in the process, swaying other participants toward their side of the issue.

In such circumstances, the participatory processes and approaches must be combined so as to filter varied voices on the same issue and slowly direct the validated information and points to the actual decisionmakers. Where facts are disputed and subject to a high level of uncertainty, the decision-making process will need to benefit from processes that validate the facts and reduce uncertainty. Stakeholders should welcome such activities, which are served, for example, by participative technology assessment methods.

2) Workshop on General Public and Stakeholder Involvement in Nuclear Decision-making

a.   Overview of the workshop

On 17-19 January 2017, the OECD/NEA held the NEA Workshop on Stakeholder Involvement in Nuclear Decision-Making (hereinafter referred to as the 'NEA Workshop') under six main topics:

- Various levels of stakeholder involvement, the terms and their meanings;

- Aspects of/factors in effective and ineffective involvement of stakeholders;

- Respective roles in effective stakeholder participation practices;

- Factual accuracy while encouraging differing positions and information;

- Approaches to enable trust and well-informed decisions; and

- The interrelationships between different areas of expert domains.

The NEA Workshop asked the Radioactive Waste Management Committee, the Committee on Radiological Protection and Public Health, the Committee on the Nuclear Regulatory Activities, the Nuclear Law Committee and the Committee for Technical and Economic Studies on Nuclear Energy Development, and the Fuel Cycle of OECD/NEA to share perspectives and document best practices. Table 3-3 shows the NEA Workshop's program.

Table 3-3. The Program of the NEA Workshop

Day 1 – Tuesday, 17 January 2017	
Registration	
Welcome and opening remarks	
Keynote speech	
Setting the scene for the workshop: Objectives and structures	
Session 1.	Legal frameworks and international conventions
Session 2.	Regulatory perspectives
Session 3.	Radiological protection
Day 2 – Wednesday, 18 January 2017	
Moderator: Opening and reflection on the previous day's discussions	
The overall policy perspective on stakeholder involvement and public debate	
Session 4.	Radioactive waste management
Group dialogue session A	
Session 5.	New nuclear facilities
Session 6.	Extended operations of nuclear facilities
Day 3 – Thursday, 19 January 2017	
Moderator: Opening	
Governmental perspective on stakeholder involvement	
Session 7.	Stakeholder involvement in other sectors
Session 8.	Media and stakeholder involvement
Group dialogue session B	
Closing session	
Closing remarks	

Source: Institute of Energy Economics, Japan based on the Organisation for Economic Co-operation and Development Nuclear Energy Agency website.

b. Common lessons from the NEA Workshop

Common lessons from the NEA Workshop were summarized and published by Ann MacLachlan, a journalist who served as the NEA Workshop moderator. These lessons are as follows:

- There is no one-approach-fits-all: The stakeholder involvement process needs to be adapted by country-specific context, although some effective practices seem to have universal applications, such as face-to-face meetings/personal engagement/local engagement;

- The process must be inclusive of all stakeholders. Even in public engagements, a bottom-up approach has proven successful in many countries and circumstances;

- Take the time to engage and debate. Start very early in the process. It will be time and resources well spent;

- Younger generations must be included early in the process to ensure a sustainable dialogue with the public. When it comes to nuclear activities, stakeholder education can be part of the long-term process.

- Stakeholder Involvement is not static. The world is evolving and innovation is needed to adapt and improve: e.g. adapting international methods to home country context, or learning to use new tools such as social media;

- There is a need for common understanding of terms: Know the broad range of meanings associated with basic terms such as Stakeholder, Public, Affected, Concerned, Involvement, Engagement, Confidence, Trust. When in doubt, seek for clarification.

- Agree on the objective of the stakeholder involvement: Stakeholder involvement is more than public consultation or public engagement. Take all stakeholders into account. This improves the quality of the decisions and the project's success;

- There are some engagement approaches that have universal application: Face-to-face/personal interaction/learning how to listen are useful traits at all times; and

- There is already a vast body of experience in terms of best practices and concepts. There is no need to re-invent the wheel. Engage those with long NEA experience in areas of waste and radiation protection.

3.8   World Nuclear Association

1) Communication Initiatives of an International Industry Organization

The World Nuclear Association (WNA) is the international organization that represents the global nuclear industry. Its mission is to 'promote a wider understanding of nuclear energy among key international influencers by producing authoritative information, developing common industry positions, and contributing to the energy debate'. The WNA is the only industry organization with a global mandate to communicate about nuclear energy, working alongside related international organizations and other regional and national nuclear associations around the world.

Believing that there ought to be a balanced energy mix, including nuclear, to support both economic progress and environmental conservation such as mitigating global warming, the WNA established a long-term objective of providing '25% or more of electricity by nuclear power in 2050'. Based on this concept, it has developed its own vision called Harmony Programme, and communicated such to its partners. The content of the Harmony Programme is described below.

a. Problem awareness in the Harmony Programme

When constructing any long-term outlook on energy, being able to have a 'stable supply of electricity' is the most important, albeit challenging, task. There still are some parts of the world where people cannot use electricity where and when needed. There continues to be a growing demand for electricity among two-thirds of the world's population.

In response to this challenge, the closest-to-the-best method is to establish a balanced mix of multiple general technologies while taking into consideration the balance between the various energy needs of people in the world and environmental restrictions. Lobbyists pushing for '100% renewables' seem to dominate energy policy discussions these days. Unfortunately, these lobbyists make no practical attempt to address all competing factors required for the energy mix.

b. Necessity of expanded use of nuclear energy

Fossil fuels have played major roles across all sectors—electricity, transport and heating—since the industrial revolution started. However, burning fossil fuels releases greenhouse gases, which contribute to an accelerated and dangerous rate of global warming. The scientific community's consensus is that within a few decades, there will be a rise in the world average temperature of greater than two degrees Celsius unless countries reduce their share in the energy mix to lessen their greenhouse gas emissions. Decarbonization is an urgent task for the energy system, and this massive endeavour requires the expanded use of all currently available low-carbon technologies.

Nuclear power generation has many merits as a low-carbon technology. In the IEA's two-degree Celsius scenario, nuclear energy has the largest single role to play. Expanding the supply of electricity by roughly 17% by 2050 requires 'substantial increase in capacity—far beyond the rate of new build seen in the Western world today'. The World Nuclear Association (n.d.)   further states: 'Here, it is worth noting that while nuclear energy is a technology proven at almost any scale in a system we still don't know if large-scale intermittent renewable deployment, energy

storage or carbon capture storage will turn out to be technically or economically viable. In addition, the electricity demand may surpass the forecast if urbanization or electrification of transportation advances rapidly. This motivates the case for raising the target for future nuclear energy deployment even beyond the one indicated by the International Energy Agency.

'Based on the International Energy Agency's two-degree scenario, the WNA has developed its own vision for the future of electricity - *Harmony*. In this, nuclear energy expands to supply 25% of electricity by 2050 and forms part of a diverse mix of available low-carbon generating technologies, which are deployed in such a manner that the benefits of each are maximized while the negative impacts are minimized. That is, renewables, nuclear and a greatly reduced level of fossil fuel work together in harmony to ensure a reliable, affordable and clean energy supply. In this optimized energy system the needs for societal development and prosperity are finely balanced against those of the natural environment' (WNA, n.d.).

c. Targets for expended use of nuclear energy

According to leading nuclear industry figures, an increase in nuclear energy from 11% of global electricity today to 25% by 2050 is equivalent to roughly 1000 GWe of new nuclear capacity to be constructed (Note: This varies depending on other factors such as reactor retirements and electricity demand growth).

It is a fact that the rates at which new reactors must be constructed in order to meet the targets are no higher than has been achieved historically. However, the unfamiliar challenges arise from the difficulties in new site locations and the modern landscape of social and economic issues. To achieve the goals, the global nuclear community must work together to make solution-oriented responses. Here WNA is keen to lead the way.

In expanding the use of nuclear energy, it is vital to identify and demolish the real barriers to growth, rather than focusing purely on technology. The WNA (n.d.) has determined the following international objectives as key to achieving the Harmony Programme's goals:

▪ '**Establishing a level playing field for low-carbon technologies -** Countries stipulate technology-neutral, healthy market rules and establish frameworks that value not only

levelised costs but also system reliability and environmental benefits, to facilitate healthy competition in the development of low-carbon technologies.

- **Realizing efficient regulatory processes -** So that flow-on efficiencies can be achieved with global codes and standards, and efficient licensing of current and new technology.

- **An effect-focused safety paradigm -** This should increase genuine public well-being by reducing emissions from polluting sources, and ensuring that high nuclear safety standards are met'.

3.9   International Energy Agency

1) Study on Social Acceptance for Energy Technologies with Risk

International Energy Agency established a working group called Wind Task 28 and conducted a study on social acceptance for wind power generation as an energy technology with risk. In August 2010, the Wind Task 28 released a compilation of study results and potential future issues on the subject. Based on previous studies on social acceptance for wind energy in various countries and the latest trend of wind farm development, the report provides a complete picture of today's knowledge, narrowing down the topics into three aspects:

- *What do we know about social acceptance?*

- *What do we need to know?*

- *Which areas require more research or implementation efforts?*

The report indicates that the ability to generalize the statements in the report is restricted because the resource studies mostly originate from highly industrialized countries such as Australia, Canada, Europe, Japan and the United States.

2) Three Concepts of Social Acceptance

The IEA Wind Task 28 uses the three concepts of social acceptance in Figure 3-14.

Figure 3-14. The Three-Dimensional Concept of Social Acceptance and Stakeholder

Framework

Category	Concept
Socio-political acceptance	The most general dimension of acceptance and refers to the attitude of the public, key stakeholders, and policymakers.
Community acceptance	Related to acceptance by local stakeholders and stakeholder framework regarding siting decisions and renewable energy projects. Often, concerns of procedural and distributional justice as well as questions of trust arise at this level.
Market acceptance	Involves both consumers and investors and refers to the process of how the market adopts and deals with innovations.
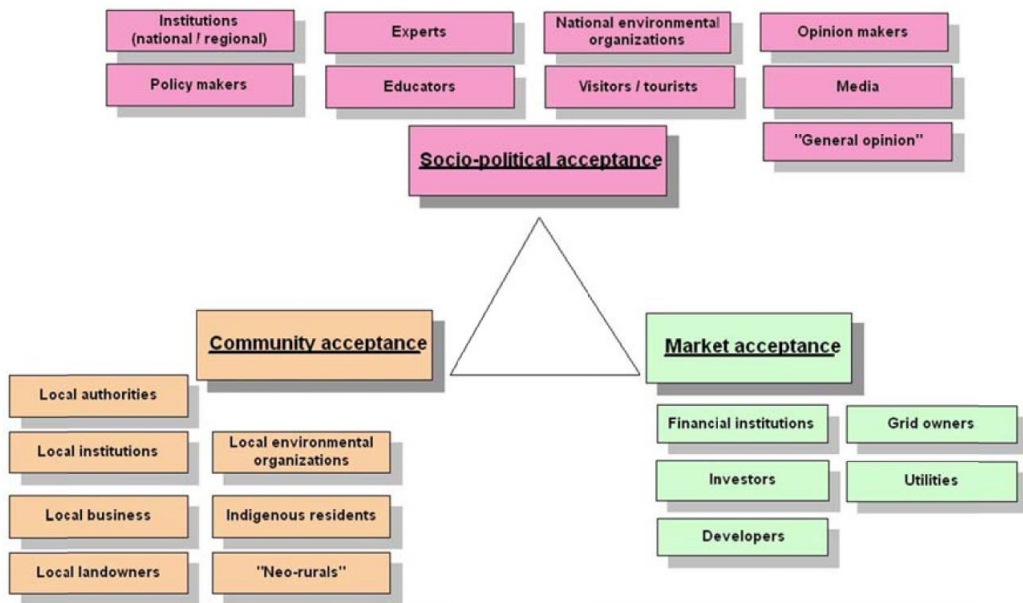
Source: International Energy Agency Wind Task 28 'Social Acceptance of Wind Energy'.

a. Social acceptance of wind energy projects

Knowledge on social acceptance of energy technologies, including wind energy, has been accumulating for decades. Experience has shown that there are real concerns to be taken into account; emotions and values are various, and every situation is different because there are local structures, characteristics, and histories to respect.

Some of the key issues for social acceptance of wind energy projects discovered to-date are listed in Table 3-4.

Table 3-4. Some Key Issues in Social Acceptance of Wind Energy Projects

Category	Area	Issue
Socio-political acceptance	Policy and regulation	Wind energy policy, renewable energy strategies, spatial planning, siting decisions, and financial incentive programs can have direct and indirect effects on social acceptance and are influenced by socio-political acceptance discussions as well.
	Wind energy in forests	Discussions on the acceptance of wind farms in forests have become more prominent recently. There is no consensus yet about what wind development is acceptable in forests, taking into account the value of forests in the different countries.
	Transmission lines and grid expansion	Transmission lines and other infrastructure questions are not separable from wind power deployment. Awareness of this connection must be raised, but it seems that benefits distribution is more difficult for transmission lines than for the wind farms.
Community acceptance	Quality of life	Concerns over negative health impacts due to annoyance and stress related to noise, low-frequency sound, shadow flicker, or obstruction markings for the people living in areas surrounding the turbines have raised vivid debates about wind farm planning.
	Standard of living and property values	There are concerns over negative impacts on real estate values. On the other hand, there are positive effects on regional development, such as additional income and jobs created in the region.
	Landscape and ecosystem	While wind power does help to reduce CO_2 emissions and to diversify the energy mix, changes in the landscape and effects on the local ecosystems have to be openly discussed, weighed, and minimized. Issues of landscape and ecosystems are discussed for onshore as well as offshore but with varying characteristics and argumentations.
Market acceptance	Distributional and procedural justice	Opposition should not be discarded as stupid, bad or wrong, and information and consultation should not be handled carelessly. Developers, planners, and investors should, on the contrary, incorporate the locals and create win-win-situations to prevent a deepening of conflicts.

Source: International Energy Agency Wind Task 28, 'Social Acceptance of Wind Energy'.

▪ Success factors for social acceptance of wind energy projects

Success factors for wind energy projects in terms of social acceptance have been distilled by analysing case studies. Best-practice guidelines for the industry or for authorities have incorporated aspects of

communication and consultation in the different stages of project management. Some of these guidelines highlight ways to deal with quality of life issues or concerns in the planning, building, and operation of a wind farm.

- Socio-political acceptance

Opinions on renewable energies and wind energy, as proven by polls and surveys, are generally positive. Results confirm that many acknowledge the need to invest in renewable energy technologies. However, this understanding has to evolve into broader involvement of the affected public and the different authorities in the planning and decision-making process.

Policymakers have to realize that their task is not fulfilled by setting targets and quotas. Social acceptance needs a follow-up and has to pervade various institutions at each stage of the wind energy project.

Media's predilection for scenarios where conflicts and arguments abound makes it easy for those who oppose wind projects to catch the attention of journalists. Their media-focused activities have generated a lot of noise.

In addition, because of advances in information technology, anyone can freely broadcast his opinion. In this milieu, trust and credibility have become a precious good. These have to be sought and won in the social media space, which increases the value of social networks and personal contacts.

- Community acceptance

Discussions on wind energy projects at the local level are often complex. The community consists of different interest groups and each location has its own story, structure, experiences, deep emotions and values attached to the sea, landscape, and the ecosystems.

With today's knowledge and technologies, much of the historical impacts of wind development on quality of life as well as on the environment can be minimized and mitigated. However, perceptions of annoyance and the emotions attached to the landscape have a psychological component that cannot be neglected.

The benefits and gains of a wind farm are often not obvious. This is because these benefits accrue indirectly, or because they matter more on a national or international scale, such as the reduction of CO_2 emissions. Such positive impact ought to be communicated as broadly as possible. Locals, particularly the affected residents, must be brought into the planning and decision-making processes as well as into financial participation opportunities as soon as possible so that their inputs and concerns are heard.

- Market acceptance

Developers and planners deal directly with different interest groups—the institutions, the community, and environmental organizations. In certain cases, however, weaknesses in these developers and project managers' behaviour during the participation process could have hampered the social acceptance process around wind energy projects. For instance, a condescending treatment of the opposition and a careless handling of information can provoke the opposition to retain their hardline stance and thus deepen the conflict.

The opposition should not be dismissed as stupid, bad or wrong. As wind farms bring change to the living environment of people, the locals have a right to air their opinion on the project. Legitimate arguments and constructive inputs should instead be pursued to find ways to improve a project for everyone's long-term benefit. In sum, the participation process is not just about planning and technology; it is about sensitivity and intuition among the collaborators as well as the ability to create win-win-situations and to achieve a fair balance of interests.

In other countries, utilities have taken on various roles. Acceptance in the utility sector therefore is often important in developing wind energy through feed-in tariffs and policies to promote renewable energy technologies.

Financial institutions, too, are involved in stakeholder engagements, as in the case in some countries such as Japan or Germany. Meanwhile, in other nations such as Canada or Switzerland, factors such as risks or their economic performance have limited the role of their financial institutions. In other words, factors such as the nation's regulatory framework and the stability of the market affect financial institutions' level of engagement.

b. Lessons from preceding studies: Communication strategies

The report of Wind Task 28 points out well-being, distributional justice, procedural design, and implementation strategies as variables that influence social acceptance.

- **Well-being**: Addressing and communicating negative and positive impacts of wind energy on people, valuation of ecosystems
- **Distributional justice**: Wind energy costs, perceived transfers of wealth, burden sharing, impact on the local economy, possible ownership models, and financial participation opportunities
- **Procedural design**: Participation, public consultation, respect of cultural relationship, and local context
- **Implementation strategies**: Communication, guidelines, practical application of scientific results

Furthermore, below are some lessons on implementation strategies in the area of communication:

- If a communication strategy of the government/operator can connect the benefits of wind turbines to significant topics such as climate change and air pollution, the wind energy project can easily turn into a topic of conversations in the community and bring environmental awareness to residents.

- Start the discussion with generalities and important points and add details gradually.

- Community contact persons, such as the neutral intermediary, should be established as an important communication strategy.

- Some technology cooperation consisting of public-private partnerships, which includes those from the academe, has been most effective in eliciting social acceptance. Consistent and rigorous communication boost social acceptance further.

- Providing the public with vital information on the benefits and flaws of wind power technology compared with other energy production technologies and acknowledging the possible positive impact on the host communities could help locals come to an informed decision. Trusted messengers such as friends and neighbours who will not be paid for their opinion play an important role in this context.

- Switzerland started a project where a 'code of conduct' on how to proceed and interact was created for investors, developers, and environmental organizations in the wind energy sector. It also has a similar code of conduct for the same stakeholders, this time at the project level.

- An important issue in the future is careful press coordination, not only with traditional media such as print or TV, but also concerning internet articles and platforms such as Facebook and Twitter. In the United States, some organizations have set up a system of 'messengers'. In public forums, the messengers get information about economic benefits, costs and liabilities and then pass the knowledge to people in their communities.

- Many authors have cited the need for education in preceding studies, and efforts are ongoing in many participating countries. Some examples are:

  ➢ In the United States, the Wind for Schools Project installs small wind turbines in rural and elementary schools to provide a concrete and practical demonstration of wind energy; to allow students to integrate data from the turbine into their theoretical understanding of how it works; to provide students a 'hands-on' experience; and to offset the schools' electricity demands.

  ➢ In Canada, the project Gen E by Enmax offers educational resources and has installed alternative sources of energy in some schools. The program is intended to be expanded to the entire province.

  ➢ In Germany, the projects 'powerado' and 'powerado-plus' aim to create effective communication and education tools for renewable energies promotion to children, adolescents, teachers, etc.

c. Future tasks

There are many knowledge resources on how to deal with social acceptance questions within the wind industry. However, it is not always easy to obtain such knowledge. Enhanced exchange between social scientists on one hand and developers, planners, and engineers on the other side will provide useful insights. Social scientists need to formulate their findings in a language other disciplines may be able to appreciate so that the latter can use the study and even get the financial resources to do so.

Developers, investors, policymakers, and authorities on the other hand have to accept the findings from social scientists even if this signify additional time and effort for the projects. It is important to seek ways of integrating these findings into the work of developers, policymakers, etc.

New approaches could be developed to strengthen and link the people supporting wind energy, therefore avoiding the focus on the opposition only and their arguments and broadening the involvement. Also, there is the need for more democratic processes—the balance between top-down and bottom-up; and between hierarchical and decentralized planning.

Participation of ordinary citizens as financial investors is one way of achieving involvement and influence, although this is getting more difficult due to the trend towards large-scale wind developments. Hybrid ownership models have to be developed and a decrease in transaction costs has to be achieved to encourage a sense of identification with and ownership of even large-scale projects and offshore developments.

There already exist guidelines and manuals on how to set up a wind farm, often including aspects of social acceptance, as well as those specifically on wind power. However, in-depth manuals on consensus building and training geared for the people working at the forefront are rare. In addition, how these guidelines were implemented has not been assessed yet.

Knowledge gaps still exist on the impact of wind farms on the quality of life—for example, on noise and sound, long-term exposure, impacts on sleep physiology, or the efficacy of setbacks. The same gap is observed in terms of the environmental impact on specific species and their changed behaviour, and on the ecosystem as a whole.

d. Conclusions

The general acceptance of wind energy is rather high, which is mirrored in the growth of the wind industry and the increase in installed capacity in most countries. But social acceptance issues have to be considered with care. Otherwise, a lack of social acceptance has the potential to protract the realization times for projects and increase wind energy development costs.

Past experience demonstrates that it is not possible to achieve a 100% social acceptance. There will

always be people who oppose specific projects. Therefore, the goal shall be set to 'win hearts and minds' and 'turn affected people into involved parties' so as to get as much public support as possible by open dialogue, more democratic processes, and honest involvement. This requires developers and proponents to commit to accept inputs and criticisms as a way of improving the project and to adapt the project to the surrounding landscape, the environment, and the people living alongside the turbines.

3.10   Comprehensive Framework

As demonstrated in the sections above, the stakeholder involvement process needs to be adapted to a country-specific context, and there is no comprehensive framework that can be adopted for all situations. However, some of the universal lessons here are:

- Regulatory body and operators should build on the locals' trust.

- Some practices seem to have universal application, such as face-to-face meetings/personal engagement/local engagement. Meetings meant primarily to share information among attendees are held in most countries. These may be coordinated by the regulatory body or local government or operator. Attendees may or may not have voting rights. Even in meetings without any decision-making agenda, it is still worthy to listen to the voices of members of the community and simply interact.

- The interaction process must be inclusive of all stakeholders. Take the time to engage and debate. Start very early in the process. It will be time and resources well-spent. This improves the quality of decision-making and improves chances for success of a project.

- Younger generations must be included early in the process to ensure a sustainable dialogue with a cross-section of the community.

- Information should be provided continuously. It should be clear, timely, concise and accurate. Opposition should not be dismissed as stupid as any differences in opinions or sides to an issue can potentially improve a project for everyone's long-term benefit. The participation process is, after all, about sensitivity and intuition as well as knowledge to create win-win-situations and to achieve a fair balancing of interests.

- Respondents more knowledgeable about nuclear power gave high ratings on nuclear power. Providing accurate information is the basic rule when exchanging opinions with someone who takes the other side of an issue.

- Taking a uniform communication approach across all segments of the general public is ineffective.

- It is important to provide information regularly and efficiently through social media.

- Opposition tends to increase after a plant accident, even though the accident is unrelated to the project in one's locality. It is therefore good practice for plant operators to vigilantly monitor their plant's operations so as to avoid accidents.

- It is improbable to achieve a 100% social acceptance for wind energy, despite it's already high acceptance level. There will always be people who oppose specific projects. The more practical goal, therefore, shall be set to 'win hearts and minds' and 'turn affected people into involved parties' to get as much public support as possible by open dialogue, more democratic processes, and honest involvement.

3.11. Seminar on 'Create a Better Social Acceptance for Electric Power Infrastructure'

On 26 June 2017, the seminar on 'Create a Better Social Acceptance for Electric Power Infrastructure – Coal-fired Power Plant' was held at the Grande Centre Point Ratchadamri, Bangkok, Thailand. This section is devoted to a summary of the findings on social acceptance from the event.

At the second session of the event, various country efforts to create better social acceptance for electric power infrastructure, including coal-fired power plants, were introduced. The input came from the panellists representing the companies PT Indonesia Power, Indonesia; Electric Power Development Co., Ltd. (J-POWER), Japan; Philippine Coal Plant User's Group (PCPUG), the Philippines; and Power Engineering Consulting Joint Stock Company 2 (PECC2), Viet Nam.

In Indonesia, the Ministry of Environment developed the corporate performance assessment program on environmental management called 'PROPER' in 1995. The program evaluates the maturity of the environmental management of each company, including electric utilities, based on five ranks: gold, green, blue, red, and black. Companies that comply with all the requirements of environmental management are awarded the blue grade. However, to attain the upper ranks (gold or green), companies have to do other corporate social responsibility activities such as wildlife conservation.

Since the outcome of the assessment is announced in newspapers, the program managed to encourage companies to improve their environmental management activities. The corporate performance assessment program and corporate social responsibility activities mentioned above may not lead directly and immediately to better social acceptance, but they are indicative of a company's trustworthiness and pursuit to embrace environmentalism.

In Japan, emission standards applied to coal-fired power stations vary based on each plant's

commercial operation date, location, and municipal government. In the case of the Isogo coal-fired power station of J-POWER, the local government of Yokohama City required the company to comply with emission standards that were stricter than those of the central government.

The Isogo power station is also equipped with an emission monitoring system, which transmits data to the city in real time. This system enables the company to gain the trust of the local government by ensuring transparency.

In addition, electric companies in Japan have events that invite the public to their stations. The Isogo power station itself accepts about 6,000 visitors yearly and holds an 'Annual Open Day', where visitors are given a site tour as well as enjoy fun events designed for families.

Electricity companies also avoid making decisions in silos. They consult the local government as well as the local public regularly for every decision and adjust plans collaboratively. They consider it important to comply with the local government's environmental requirements.

In the Philippines, the Department of Energy has a financial program for the host communities of coal-fired power plants. Host communities are entitled to one centavo per kilowatt-hour of the electricity sales of the generation facilities and/or energy resource development projects located in all *barangays*,[8] municipalities, cities, provinces, and regions. The program's main policy objective is to recognize and recompense for the contribution made by the host local government units or municipality. The funds will be used for such projects as electrification (50%), education and livelihood (25%), and reforestation, health, and environmental enhancement (25%). This financial program of the government contributes to better acceptance by local communities.

In Viet Nam, serious environmental incidents had occurred in two CPPs recently: Vinh Tan 2 had a fly ash incident in May 2015, while Formosa had discharged untreated chemical waste water into the sea in April 2016. Local residents reacted by protesting against the CPPs. The local governments and related authorities, on their part, grew wary and took a longer time to review and approve new CPPs, for instance.

This experience demonstrates again that while it takes a long time for companies to gain the trust and acceptance of both the local government and people, losing them is easy and immediate. Both electric companies and regulatory agencies have to bear in mind that compliance with the environmental protection law and other legal regulations during the construction and operations stage of a plant is one of the most crucial steps towards gaining social acceptance.

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[8] The smallest territorial and administrative unit of the local government.