

## Keynote Lecture

### The role of risk communication in risk governance

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This presentation will cover basic concepts related to risk communication. Risk communication is based on differences in people's perceptions of uncertainty in quantitative risk assessments. In order for society to appropriately manage its risks, it is essential for stakeholders to share their differences and work together. Dialogue in these various situations is called risk communication, and there are many issues to be aware of due to the handling of risk information. In this presentation, I will discuss several cases related to the nuclear power business.

#### 1. What is risk communication?

The concept of risk communication was established due to the introduction of risk-based chemical management worldwide, based on the experiences of pollution and serious chemical plant accidents in the 1950s and 1960s, and environmental pollution by chemicals since the 2000s. Risk-based management is a concept that aims to manage chemicals not only because of their high toxicity, but also by focusing on the convenience of appropriate use, using the amount of emissions into the environment and the amount of exposure to humans as indicators. In Japan, it is the basis of chemical management systems such as the setting of environmental standards, the Chemical Substances Control Law, and the Law Concerning the Release and Management of Chemical Substances. Figure 1 is the risk governance model of the International Risk Governance Council (IRGC). This diagram shows the basic concept of risk management, and is said to show the role of risk communication. Risk assessment consists of hazard assessment, exposure assessment, etc. Concern assessment is an assessment of people's risk perception, social concerns, and socioeconomic impacts. The appropriate use mentioned above is included in the concern assessment. Risk management of chemical substances is carried out by taking into account the results of two assessments: scientific risk assessment and concern assessment. Words such as communication, stakeholders, and engagement at the center of the diagram indicate the need for collaboration and dialogue between stakeholders such as businesses, governments, and residents to properly manage risk, and thus demonstrate the role of risk communication. The need for dialogue will be explained in the next chapter, as it is necessary to understand the important characteristics and uncertainties of risk.

Chemical substances are not the only risks that need to be managed in society. Risk communication is a social technology that has been academically organized and socially implemented in risk management systems that take into account the characteristics of each risk, such as risks expected to accompany business activities (factory and power plant operations), measures against natural disasters, food safety, and infectious disease countermeasures.

#### 2. The need for risk communication that takes uncertainty into account

Uncertainty is one of the important concepts for understanding risk communication. Risk is defined as the probability and magnitude of an undesirable event occurring in the future, and quantification is being attempted for each risk. For example, risk assessment of chemical substances is performed by comparing the amount taken into people's bodies (exposure amount) with the amount at which toxicity is manifested (toxicity value). However, even with the same exposure amount, the same symptoms do not necessarily appear in all people. The reason for this is thought to be that there is a range of values to be handled, such as toxicity values being calculated taking into account individual differences in onset and values obtained from animal experiments, etc., with a safety factor taken into account. It is also said that people begin to seek measures when the probability of an accident occurring exceeds 1 in 100,000, but they may also seek an even lower probability of occurrence due to concerns that they, their family, or their acquaintances may be one of those affected. The former can be understood as the uncertainty inherent in risk assessment, and the latter as the uncertainty in the assessment of concerns, and is one of the factors that lead to diverse attitudes among people toward quantitative risk assessment results. In addition, we have noticed something through our experience of working with various stakeholders (residents, governments, businesses, etc.) to solve problems at the locations of factories, waste disposal sites, nuclear power facilities, etc. that are considered

nuisance facilities. The government, industrial manufacturers, and power companies aim to publicize the safety of their businesses and understand their implementation, but ordinary citizens and residents have various thoughts based on the impact on their lives based on their individual values. It is impossible to make people take the same action based on scientific evaluation alone, and the intention is not democratic. The solution requires two-way communication, such as joint consideration through dialogue, collaboration, and involvement, rather than just one-way explanation, and this is how risk communication has been created.

### 3. Institutionally required risk communication

It was only in the 21st century that risk communication has been clearly positioned in various legal systems. Risk communication is positioned for the purpose of risk management in laws aimed at managing chemical substances in the environment and food, such as the Food Safety and Sanitation Act, the Chemical Substances Management Promotion Act, and the Soil Contamination Countermeasures Act, nuclear-related laws such as geological disposal of high-level radioactive waste, and in the field of infectious disease countermeasures, in order to prevent damage to human health. In this presentation, I will discuss two case studies.

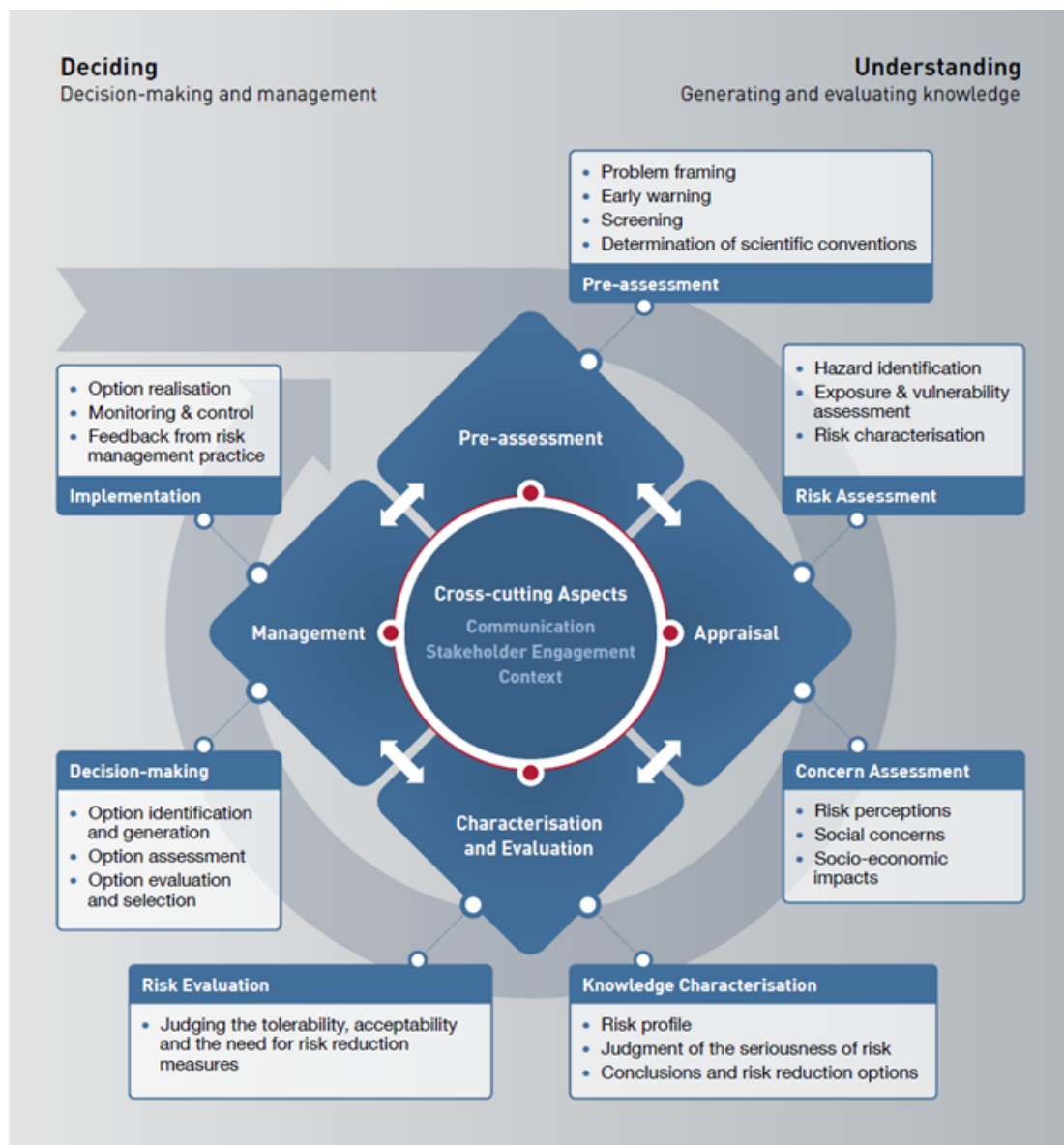


Figure 1. The IRGC risk governance framework

### 4. Institutional risk communication

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management in laws aimed at managing chemical substances in the environment and food, such as the Food Safety and Sanitation Act, the Chemical Substances Management Promotion Act, and the Soil Contamination Countermeasures Act, nuclear-related laws such as the geological disposal of high-level radioactive waste, and infectious disease countermeasures. In this presentation, two cases will be described.

#### **4.1.1 Reuse of removed soil**

In the accident at the Fukushima Daiichi Nuclear Power Plant following the Great East Japan Earthquake in 2011, radioactive materials were scattered in the surrounding area, and as of 2024, there are still areas where it is difficult to return, and efforts toward reconstruction are ongoing. The most important task for the return of evacuees is to reduce the radiation dose, and decontamination work has been carried out since 2011. The removed soil resulting from decontamination work in Fukushima Prefecture is currently stored in an intermediate storage facility spanning the towns of Okuma and Futaba. Based on the Act on Special Measures for Handling Radioactive Contamination, the national government is considering final disposal outside Fukushima Prefecture and reuse for volume reduction by 2045. Regarding reuse, a recycling demonstration test will be conducted in the Nagadoro area of Iitate Village, Fukushima Prefecture, and demonstration tests are planned outside the prefecture, such as Saitama Prefecture and Tokyo.

In Saitama Prefecture and Tokyo, explanatory meetings were held for residents around the suspected site of the incident, but it has not yet been determined that they understand the plan.

#### **4.1.2 Final disposal of high-level radioactive waste**

In Japan, the Basic Energy Plan stipulates that spent nuclear fuel from nuclear power plants will be reprocessed and then disposed of in a geological repository as a vitrified body. Although a candidate site for geological disposal has not been decided, a literature survey, which is the first stage of the investigation, has begun in three towns: Suttsu Town, Kamienui Village, Hokkaido, and Genkai Town, Nagasaki Prefecture. In the literature survey, a major feature is that "dialogue forums" are positioned as a system for providing information to residents, and Suttsu Town and Kamienui Village have held about 17 "dialogue forums" since April 2020. Since March 2024, a three-year review has been conducted. The current situation and issues of risk communication are described from two cases.

#### **4.1.3 Current situation and issues**

Both dialogues are risk communications that explain the risks of transporting removed soil and high-level radioactive waste and their management methods for the future. In addition, it is important that the dialogue with residents begins before the project is carried out, and explanatory materials, minutes, records used in the meeting, videos, etc. are made public. In this way, holding dialogue forums for various stakeholders about the risks associated with the implementation of various business activities has become a common social convention, not only for nuclear-related businesses. In addition, rather than a formal explanation, the format is conscious of follow-up, such as responding to diversity by holding multiple consecutive meetings and devising content, and conducting reviews. However, various issues have come to light, such as the need for disclosure of information, ensuring the privacy and safety of participants, and the need for fair selection of participants.

### **5. Conclusion**

Considering that such activities will become commonplace in various risk management fields in the future, I understand that risk communication has entered a stage of forming a continuous framework for social implementation as an essential element of society, not only by addressing the issues mentioned above, but also by training planners, managers, and implementers of dialogues and establishing implementation organizations.

### **References**

- [1] IRGC, Involving Stakeholders in the Risk Governance Process. 2020,  
[https://irgc.org/wp-content/uploads/2020/10/IRGC-Stakeholder-Engagement-Resource-Guide\\_Version2\\_2020-3.pdf](https://irgc.org/wp-content/uploads/2020/10/IRGC-Stakeholder-Engagement-Resource-Guide_Version2_2020-3.pdf)