

Conclusion: Creating the “shape of this country”

Kazuto Suzuki

This report is not a continuation of the inquiry conducted by the Independent Accident Investigation examining the current status of the accident. Rather, it discusses how the lessons and recommendations drawn by the many accident investigations, including the Independent Accident Investigation, were understood, learned, and changed government and society. Above all, it focuses on points such as whether safety regulations have overcome the “safety myth”, whether TEPCO has changed its management and its culture, whether government offices are well prepared for crisis response, and who, when a worst situation is reached, will or has come to handle the situation with what authority and responsibility. It also deals with the issue of rebuilding that was not touched upon by respective reports released in the first or second year after the accident, showing that “preparedness” for and “learning” about nuclear accidents must also cover rebuilding.

Based on these analyses, this chapter reconsiders what the Fukushima Daiichi Nuclear Power Plant accident was, reconsidering the nature of corporate and government governance in that context, and reappraising the state of Japan’s legal system and other systems during the extraordinary times of a national crisis, concluding the report with a synthesis of the implications for “the shape of this country”, so to speak.

The birth of a new “safety myth”

The Independent Accident Investigation pointed out “the trap of the absolute safety myth” as one of the factors in the Fukushima Daiichi nuclear power plant accident, and concluded that it made the nuclear power plant’s preparedness for the accident insufficient. The absolute safety myth is “a belief system in which social psychology takes a taboo view of nuclear disaster risk as the upper structure, and the interests and concerns of the nuclear power village that promotes nuclear power generation is the lower structure”.¹ As a result of pursuing the “small peace of mind” of the people, it led to a loss of the “great safety” of the people and the nation.

This “safety myth” is often presented as a belief of those promoting nuclear power generation, and is described as an alchemy of safety regulations enabling nuclear power generation by providing a “small peace of mind” to the people. It is argued by media and scholars that the safety myth was destroyed by the Fukushima Daiichi nuclear accident². This discourse has become popular, and has led to a belief in many places throughout society that we won’t make the same mistakes again because the safety myth has collapsed; the new nuclear safety regulations are strict and aren’t hoodwinked by the old safety myth; it will make things tough for the pro-nuclear power group. Is this true, however?

The harm of “homework” regulation

Tsuyoshi Shiina, a member of the Parliamentary Accident Investigation’s secretariat, dubbed the new regulatory standards set by the Nuclear Regulation Authority “homework style” regulations, and the 10CFR safety regulations announced by the US Nuclear Regulatory Commission (NRC) as an “objective-driven”, explaining the difference between the two ideas³. “Homework style” regulation refers to the regulatory authority setting “homework”, the operator completing the “homework” and achieving a pass grade, which is guaranteed to be “safe”. The “objective-driven” idea refers to a method of regulation in which an objective is set “to prevent damage to residents in the event of an accident,” and the method of achieving that objective is left up to the operator.

¹ Independent Investigation Commission on the Fukushima Daiichi Nuclear Accident, 2012, pp.385–386.

² Kuroda, et al. (Eds.), 2012.

³ Interview with Tsuyoshi Shiina, October 9, 2019.

This difference in “homework style” and “objective-driven” regulatory mindsets is crucial when considering the “safety myth”. The “homework style” regulations may be the “most stringent in the world”, but their basic assumption is events “anticipated as much as possible” and setting regulatory requirements to respond as best as possible to such events. Meeting regulatory requirements becomes the goal of operators, and by meeting this goal, they believe that “safety” has been achieved and they provide people with “peace of mind”.

However, there are a number of problems involved in this “homework” regulation. First, when using homework style regulation to aim for “absolute safety”, it is necessary to set extremely unrealistic regulatory requirements, which not only imposes a heavy burden on the operator but also severely restricts the operator’s management. George Apostolakis, a former commissioner of the US Nuclear Regulatory Commission (NRC) from 2010 to 2014 at the time of the Fukushima Daiichi Nuclear Power Plant accident, noted, “[the Regulation Authority] they’re really killing the industry. Extremely expensive to respond,”⁴ and further pointed out that strict regulations make nuclear power plants inoperable. If the task of the Regulation Authority is to ultimately stop nuclear power generation and achieve the so-called denuclearization of power generation, such regulations can be said to be rational, but its role is “to ensure safety in the use of nuclear energy in order to contribute to the protection of life and property, the conservation of the environment and the security of Japan”⁵. As long as the use of nuclear power is a prerequisite, it should be thinking of how operators can continue their businesses as well as enabling the sustainable use of nuclear power.

Secondly, homework regulations restrict dialogue between regulators and operators, confronting operators with one-sided regulatory demands from the regulators. Apostolakis also commented, “the NRA had to show that they were truly independent, so they isolated themselves. So, that explains why these regulations are so strict”⁶, having the view that the Authority refuses to engage in dialogue with the operators. Regarding this point, Shunichi Tanaka, the inaugural chairman of the Nuclear Regulation Authority, said that it was feared that the public would become suspicious if dialogue with operators was held behind closed doors, and that all dialogue should be “fully open” in a public place. He was confident that holding discussions in an open venue and in public sight meant the operators “couldn’t say anything peculiar”⁷, and if discussions descended into just going through the motions, “the public will see that and they’ll just lose credibility”⁸.

However, it is extremely difficult in a fully open environment for an operator to ask for a revision of regulations or a more efficient change to regulations for their own management reasons. It is inconceivable that the regulatory authorities and operators could exchange opinions on an equal footing in the circumstances that operators can hardly be said to have the trust of the people following the Fukushima Daiichi nuclear power plant accident. In this case, “homework” regulation means accepting unilateral demands from the regulators, operators whittling down their management resources in order to meet the standards, and any incentive to further improve safety is lost. A fixed hierarchical relationship is created between the teacher issuing the “homework” and the student submitting the “homework”, one in which the student does not have the authority to speak out about the “homework”.

⁴ Interview with George Apostolakis, January 29, 2020.

⁵ Japan Act for Establishment of the Nuclear Regulation Authority of 2012, Article 2.

⁶ Interview with George Apostolakis, January 29, 2020.

⁷ Interview with Shunichi Tanaka, November 20, 2019.

⁸ Interview with Shunichi Tanaka, November 20, 2019.

Furthermore, it was reported by the press that members of the Nuclear Regulation Authority had met with regulatory officers behind closed doors to hammer out a decision on policy over volcanic ash countermeasures at KEPCO before the Authority conducted its public committee session. If this is true, it means the Regulation Authority, which has been taken the position of being independent from the government and having “fully open” debate, is actually making de facto decisions secretly in cahoots with the government. It can only be criticized for not changing from the old regulatory system. If the Regulation Authority, which should act as the “teacher”, has been adjusting its “homework” in private, it would undermine its principles of independence and openness.⁹

As Kugo argued in Chapter 1, the reason why the Regulation Authority needs independence is because of the marked reality in Japan of the “regulatory capture” highlighted by the National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission. “Regulatory capture” refers to a state where the operators being regulated have a technical advantage over the regulatory authority that is regulating it, and with the on-site having more information, they are able to control regulators, water down regulations, or incorporate profit inducements into regulatory practices. The concept was originally advocated by Nobel laureate George Stigler,¹⁰ who also cites the U.S. Nuclear Regulatory Commission (NRC) as an example of “regulatory capture”. The National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission explains as follows, however.

The Commission’s examination of the way safety regulations are deliberated and amended reveals a cozy relationship between the operators, the regulators and academic scholars that can only be described as totally inappropriate. In essence, the regulators and the operators prioritized the interests of their organizations over the public’s safety, and decided that Japanese nuclear power plant reactor operations “will not be stopped.” Because the regulators and operators have consistently and loudly maintained that “the safety of nuclear power is guaranteed,” they had a mutual interest in averting the risk of existing reactors being shut down due to safety issues, or of lawsuits filed by anti-nuclear activists. They repeatedly avoided, compromised or postponed any course of action, and any regulation or finding that threatened the continued operation of nuclear reactors. The FEPC has been the main organization through which this intransigent position was maintained among the regulatory agencies and in the academic world.

Our investigation focused on the significant lobbying role taken by FEPC on behalf of the operators, and scrutinized the relationship between the operators and regulators. The Commission found that the actual relationship lacked independence and transparency, and was far from being a “safety culture.” In fact, it was a typical example of “regulatory capture,” in which the oversight of the industry by regulators effectively ceases. We found examples of this in the neutering of revisions in the Guideline for Anti-seismic Design, and the improper discussions that took place on regulating severe accident countermeasures..¹¹

The conclusion that this “significant lobbying” via the Federation of Electric Power Companies of Japan and “cozy relations with METI” “deliberated and amended” regulations in support of operators, and the “the oversight of the industry by regulators effectively ceases” changed the direction of regulations after the Fukushima Daiichi nuclear accident towards eliminating pressure from the industry and breaking up the relationship with relevant government agencies. The independence of the Regulation Authority took on the characteristics of a rigid autonomy that brooked no dialogue or engagement with other stakeholders. Its independence tended to “isolation”.

In financial regulation, which also faces the issue of “regulatory capture” as discussed later, the Financial Services Agency (FSA) escapes “captivity” by supplementing “passive regulation” with dialogue with the business operators known as “dynamic supervision”, and alongside financial institutions and their customers, aims at the kind of regulation that achieves both the goals of financial system stability and economic growth¹². However, the Nuclear Regulation Authority only engages in

⁹ See, Mainichi Shimbun, 2020a; Mainichi Shimbun 2020b; Mainichi Shimbun, 2020c.

¹⁰ Stigler, 1971, pp.3–18.

¹¹ The National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission, 2012, p.43.

¹² Mori, 2016.

homework regulation, a typical example of passive regulation, not dynamic supervision through such dialogues, and in the name of independence, is holed up in “isolation”.

Thirdly, and perhaps most importantly, homework regulation inevitably brings about risk management of the “unexpected”. As Okuyama analysed incisively in Chapter 2, the point noticed in the debate over the Fukushima Daiichi nuclear accident was that despite the fact that TEPCO reported research on tsunami by the Japan Society of Civil Engineers (JSCE), they did not deal with it properly. The court ruled that the lack of tsunami countermeasures did not amount to criminal liability on the part of management, saying, “It was not recognized that the possibility of a huge tsunami could have been predicted.”¹³ The ruling means that since there was no legal obligation to anticipate and deal with the tsunami, even if tsunami countermeasures were lacking, it does not mean that they forgot their “homework” and is, therefore, not illegal. In short, homework-based regulation is premised on the fact that the Regulatory Authority issuing the homework achieves “safety” by paying attention to every event and knowing all possible hazards. It is assumed that all accident scenarios are considered by Regulatory Authority and by incorporating them into the “homework”, and this, in turn, is to provide “peace of mind” to the people. In other words, if a problem overlooked by the Regulatory Authority issuing the homework, safety cannot be achieved and the people cannot have peace of mind. The fact that regulation by homework still prevails, however, is creating a myth that somewhere the Regulation Authority has covered all the issues and achieved “safety”, which is nothing but the creation of a “new ‘safety myth’ ” that the people are getting some “peace of mind”.

Of course, the new regulatory standards imposed on operators by the Regulation Authority certainly incorporate the idea of “defense in depth” advocated by the International Atomic Energy Agency (IAEA), and consider an accident to be possible, taking into consideration that measures including the evacuation of residents will eventually have to be taken if the situation gets out of control. Regarding this resident evacuation, however, local governments where nuclear power plants are located are given the “homework” of mainly drawing up a manual and submitting an evacuation plan. If their answer for the homework is correct, they get a passing grade. In other words, if a situation that the manual does not anticipate occurs, that is, if you face an “unexpected” situation, you will be forced to deal with it as if you were at the Fukushima Daiichi Nuclear Power Plant accident.

When faced with an “unexpected” situation, “the NRC take their regulator hat off, we’re no longer the regulator. We are a representative of the federal government to give that utility resources, we’re their conduit for resources,” but Charles Casto, formerly a regional deputy director with the NRC and the NRC’s team leader dispatched to Japan, severely castigates that “[the Japanese regulators] one thing that NISA and NRA can’t get over is to take off their regulator hat and give power over when they need to”.¹⁴ The Regulation Authority says their job is to provide “homework” as a teacher and not to help their students in times of crisis.

Prior to the Fukushima Daiichi Nuclear Power Plant accident, the problem was that being subject to “regulatory capture” and setting “homework” in their relationship with the operators, the regulatory authorities created greater room for the “unexpected”. Under the new safety regulation system, however, regulators have increased their independence (isolation), and channels of communication with operators have narrowed, so that all the “homework” is prepared by the regulators. The fact that it is “the world’s most stringent homework” not only disregards the profitability and sustainability of businesses, but also leaves no room for accepting proposals for safety improvements from the operators. And regulators are now required to keep an eye on all the issues and make assumptions on everything “unexpected”. However, as long as humans are involved, there will always be the

¹³ Japan Broadcasting Corporation (NHK), n.d.

¹⁴ Interview with Charles Casto, August 26, 2019.

possibility of the “unexpected”. Despite this, the structure of providing “peace of mind” to the people by continuing “homework-based” regulation and creating a “new ‘safety myth’ ” has not changed.

“Objective-driven” regulation should be pursued

Interviews with executives of operators raised the following points.¹⁵

- Even with results obtained through discussions in a public forum with the Regulation Authority, it is possible that actual implementation of the regulations and achieving regulatory requirements may not work or be rational.
- Regulatory requirements have the effect of enhancing safety to some extent, but if certain regulatory requirements are met, the need to make further efforts to improve safety is not recognized not only among businesses but also in their relations with the Regulation Authority.

The problem this implies is deep-rooted. In other words, homework style regulations can be turned into issues of compliance by businesses, that is, responses that aim at doing what you’re told to do and trying not to cause problems. Safety regulations are not meant to help businesses escape punishment or to satisfy regulators. There is no end to improving safety in the nuclear power business, which is a vital industry that puts many lives at risk in the event of an accident. Both businesses and regulators have no choice but to aim for “greater safety”, to “prepare” for it and to “learn” from it. Both the regulatory side and the business side should strive for safety, generate safety, and mutually share their wisdom. The introduction of “dynamic supervision” conducted by the Financial Services Agency (FSA) is the key to breaking away from regulation by homework and a “new ‘myth of safety’ ”. The dynamic supervision at the FSA refers to a method of seeking better response by “forecasting the future environment and dynamic development of financial institutions, evaluating the probability that financial institutions may diverge from minimum standards in the future, and sharing the awareness of problems with financial institutions.”¹⁶ If “financial institution” here is replaced with “business operator” in nuclear safety administration, “dynamic supervision” means projecting future energy problems and environmental problems as well as the development of the power supply business of operators, and regulatory authorities sharing their awareness of problems and seeking action for improvement. Regulators should not be placing maximum value on preventing accidents, and imposing monolithic prescriptions based on changes in technology and new knowledge, but rather engaging in constructive dialogue to seek solutions in line with operators’ individual circumstances.

This approach of homework style regulation fails to break away from the thinking that has underpinned the safety myth to date. In the wake of the accident, the safety regulations prior to the Fukushima Daiichi Nuclear Power Plant accident were simply replaced with “homework” under “the world’s most stringent” regulations.

“Object-driven” regulations should be introduced into Japan’s nuclear safety regulations.

The Regulation Authority lays down the regulatory goals. The business operator devises how to achieve those goals and implements it. The Regulation Authority confirms and licenses them. This is dynamic regulation where instead of giving a drill for homework and grading it against model answers, students are free to write and evaluate their own strengths and weaknesses, the better to share with other students.

Nuclear power remains caught in the “national policy/privatize operation trap”

¹⁵ Interview with TEPCO executive, November 27, 2019.

¹⁶ Financial Services Agency, 2017.

The Independent Accident Investigation pointed out the problem that nuclear power policy prior to the Fukushima Daiichi Nuclear Power Plant accident was promoted by an operational system known as “national policy/privatize operation”, a system where private-sector companies carry out “privately” the business of nuclear power generation, which is a “national policy” of the government promoting the peaceful use of nuclear power.

Nuclear policy has been pursued, however, leaving the question ambiguous of whether the government that promoted the policy will take responsibility or whether the operator, which is a private company, will have unlimited liability in the event of a nuclear accident.

This ambiguity became a problem once more because of the question of compensation and decommissioning after the Fukushima Daiichi nuclear accident. Under the Nuclear Damage Compensation Act, which stipulates compensation in the event of an accident, the liability limit for private companies is set at 120 billion yen, the government to support compensation by private businesses if it exceeds that amount “within the authority of the government by the resolution of the Diet”.

One issue at the time was the question known as the “Article 3 proviso” in the Nuclear Damage Compensation Act. Article 3 of the Act states that “when nuclear damage is caused by the operation etc. of a nuclear reactor, the nuclear operator involved in the operation of the reactor shall be liable for the damage. However, this does not apply if the damage is caused by an abnormally large natural disaster or social upheaval.” On this basis, the Great East Japan Earthquake was recognized as an “abnormally large natural disaster”, and methods of solving the compensation question without considering TEPCO liable were considered. In the final analysis, however, the operator, TEPCO, ended up taking responsibility for the accident, and the Nuclear Damage Compensation and Decommissioning Support Organization (NDF) was established by the Nuclear Damage Compensation Support Organization Installation Act in August 2011, the government supporting the compensation by private business.¹⁷ Based on the so-called “New and Comprehensive Special Business Plan” currently applied, TEPCO adds some 200 billion yen to NDF every year, with TEPCO to pay 16 trillion yen of the total amount of 21.5 trillion yen (2016 estimates) in compensation. To this end, TEPCO aims at securing approximately 500 billion yen annually.¹⁸ Additionally, decontamination costs will be covered by a gain from the sale of TEPCO stock held by the government, but in order to achieve this, a stock price of around 1,500 yen has to be maintained (approximately 400 yen as of the end of March, 2020).

If it was still a regional monopoly using the former general cost method, it would have been trivial to raise such profits. This is because customers who use electricity within TEPCO's jurisdiction had no choice but to purchase electricity from TEPCO and it could raise electricity prices to compensate for the compensation and decommissioning costs. However, electricity tariffs were completely deregulated in 2016, and TEPCO found itself facing a situation where so-called new power companies and power utilities active in other regions such as Chubu Electric Power, were breaking the regional monopoly and entering the market, robbing them of their customers. TEPCO was forced to divide itself into a so-called competitive section (electricity retailing and power generation) and a public interest section (power transmission and distribution), each section being divided into a

¹⁷ According to Article 16 of the Act on Compensation for Nuclear Damage: “Where nuclear damage occurs, the Government shall give a nuclear operator (except the nuclear operator of a foreign nuclear ship) such aid as is required for him to compensate the damage, when the actual amount which he should pay for the nuclear damage pursuant to Section 3 exceeds the financial security amount and when the Government deems it necessary in order to attain the objectives of this act.”

¹⁸ The Nuclear Damage Compensation and Decommissioning Facilitation Corporation, TEPCO Holdings, 2017, pp.2–9.

different company that had to be run in a different business environment. Under this kind a new business environment, TEPCO was in a situation where it was essential to restart existing reactors, specifically Units 6 and 7 at the Kashiwazaki-Kariwa Nuclear Power Station. Mr. Yamana, a former director of the Japan Nuclear Damage Compensation and Decommissioning Support Organization, said that TEPCO “lost about 20% of its customers” as a result of deregulation, and was of the opinion that “if Units 6 and 7 were running at Kashiwazaki-Kariwa on the premise of safety, it would generate about 100 billion, but they’re not. It’s really tough.”¹⁹

In this way, TEPCO, on the one hand, has “invisible (not listed on the balance sheet)” liabilities related to compensation and decommissioning, and has no choice but to aim at generating more than 400 billion yen annually. With the deregulation of electricity, it has to raise profits in a competitive environment. Moreover, as to restarting its nuclear power plants, this is not a decision for its own management alone, and although it is a huge management resource, it requires negotiations with the national government and local governments. Kazuhiko Tomiyama, who was involved in the management of TEPCO and promoted the deregulation of electricity, said, “Of course, in terms of nuclear power there are a lot of negotiations with the national government, so TEPCO had no choice but to deal with national politicians. At the same time, you have to look towards local politics for restarting nuclear power plants with local governments and prefectures. So about half of the business mindshare geared towards purely competitive markets”²⁰ still maintains the old management style of the “privately administered national policy” era. While deregulation of electricity is expected to help deregulate management and foster a management and corporate culture along more like a “normal” private company, circumstances where it faces the problems of compensation and decommissioning, and management is dictated by the political decisions of regulatory authorities and local governments, is the fate of TEPCO, unable to escape from the framework of the “national policy/private operation” era.

The situation in which management as a “normal company” under pressure from deregulation of the industry and management that further strengthens “national policy/private operation” as a legacy from the Fukushima nuclear accident must be pursued simultaneously, has increased the risk of delay in TEPCO’s reforms and the obstruction of improved safety innovations. All things being equal, they should be building an “effective” regulatory relationship based on creating relationships of trust with the regulatory authorities, but in their rush to restart the Kashiwazaki-Kariwa Nuclear Power Plant, there is no denying the possibility that they will appeal to political forces that could lead once more to “regulatory capture”.

As discussed by Okuyama in Chapter 2, the Anekawa Plan²¹, which promoted reforms in TEPCO’s nuclear power division and advocated reforms based on TEPCO’s corporate structure, was released, but it failed to dig deeply into issues linked to the cause of the Fukushima accident, and changes from inside cannot be expected. Who is responsible for the nuclear power plants with this unresolved internal paradox of being a “normal company” and a “national policy/private operation” as well as insufficient internal reform? Who is ultimately responsible in the event of an accident? With these questions unanswered, one is forced to evaluate the situation as remaining unchanged from before the Fukushima Daiichi Nuclear Power Plant accident.

Selfish Galapagosization

In the Independent Accident Investigation, the international aspects of the Fukushima Daiichi nuclear accident were taken up in Part 4, The Global Context. It argued that of the “3S” of nuclear power,

¹⁹ Interview with Hajimu Yamana, December 11, 2019.

²⁰ Interview with Kazuhiko Toyama, March 18, 2020.

²¹ Tokyo Electric Power Company, 2013.

Safety, Security and Safeguards, the emphasis was on safety and safeguards, and there was a low awareness of nuclear security issues. What became a problem there was the so-called “B.5.b problem”, which was a regulation established by the 2002 Nuclear Regulatory Commission (NRC) order (currently Federal Regulation 10CFR50.44 (hh) (2)²²) as a countermeasure to nuclear terrorism that stated “Guidance and strategies must be developed and implemented for maintaining/recovering core cooling, containment vessel function, and spent fuel pool cooling function even in the event of a large-scale loss of plant function due to an explosion or fire.” This B.5.b was reported to the Japanese side as an issue of “nuclear security”, but the government did not instruct operators appropriately to take similar measures, nor was it communicated to the Atomic Energy Commission or the Nuclear Safety Commission's subcommittee, which are the emergency technical advisory organizations for countermeasures against armed attacks and nuclear disasters.

Part 4 of the Independent Accident Investigation also pointed out that Japan did not fully learn the lessons of the Three Mile Island nuclear accident in the United States and the Chernobyl nuclear accident in the former Soviet Union, and that despite both direct and indirect warnings from international activities to improve the reliability of nuclear power use including the IAEA peer review system and the International Commission on Radiation Protection (ICRP) regarding radiation protection, Japan failed to correct these problems and proceeded apace with a form of “Galapagosization”, which deviated from global standards.

Based on the lessons learned from the Fukushima Daiichi Nuclear Power Plant Accident, it has certainly been clearly stipulated that the Nuclear Regulation Authority handles nuclear security issues, and measures for maintaining and recovering nuclear power plants based on Article B.5.b are now also included in the regulations. However, as already mentioned, the new regulations still maintain the framework of regulation by “homework style”, and are not “objective-driven” regulations that take into account the regulatory thoughts and best practices of other countries. For example, in the event of an emergency, when a Precautionary Action Zone (PAZ), in which preliminary evacuation starts, and an Urgent Protective Action Planning Zone (UPZ), in which measures such as indoor evacuation are taken, are established under regulations claimed to be “the world’s most stringent”, the truth is that these are only “homework style” regulations that have been approved by the IAEA. It is hard to say that the experience of evacuating residents at the Fukushima Daiichi Nuclear Power Plant Accident has been utilized here.

Of course, the lessons from the Fukushima Daiichi Nuclear Power Plant Accident have not gone completely unlearned, such as regulations on off-site centers that take into account protection from tsunami and radioactive materials. However, as Isobe argued in Chapter 6, there is still no solid mechanism for cooperation between first responders such as the SDF, police, and fire fighters off-site. As Kobayashi argued in Chapter 5, there is no evidence that the need for an independent organization similar to the French Nuclear Accident Response Force (FARN) has been discussed sufficiently in the event of being unable to use onsite equipment in an emergency.

Also regarding the issue of rebuilding, the experience in Fukushima is completely different to that experienced in Three Mile Island and Chernobyl in that there has only been very limited international communication regarding decontamination and decommissioning directed mainly at experts. The world has learned from past nuclear accidents and has absorbed the lesson of accident preparedness, but it is difficult to say that the experiences of the Fukushima Daiichi nuclear accident have been shared by many countries or the lessons learned at the level of residents as well as experts.

²² Nuclear Regulatory Commission, 2011.

In particular, as discussed by Kainuma in Chapter 7, international dissemination on decontamination and thyroid cancer tests to eliminate various social concerns associated with the nuclear accident is extremely limited, and one often witnesses the phenomenon of political movements based on specific values such as anti-nuclear and pro-nuclear power plant movements as well as the international distribution of advocacy-based information. In some cases, this has resulted in harmful rumors or misinformation that affect Japan's agricultural exports, including those from Fukushima Prefecture.

A typical example would be the problem of contaminated water. Water contaminated with radioactive substances generated from the Fukushima Daiichi Nuclear Power Plant is filtered using purification devices such as ALPS to remove most of the radioactive substances, leaving only tritium, which is accumulated in tanks after filtering. However, Goshi Hosono, who worked on the problem of contaminated water as the Minister of the Environment in the then DPJ (Democratic Party of Japan) Administration of Naoto Kan, said that “it is the government that caused the concern, so the root of the concern lies with the government.” He responded politely, but did not have too much to say on excessive claims about the contaminated water risk, which he described as “a fake news thing”. Subsequently, however, false information started circulating in Korea and other countries, and he considered the reason was “we didn’t fight properly over that in Japan”, trying hard to disseminate information.²³ Dissemination of information was poor in the immediate aftermath of the accident, and since they were unable to distribute accurate information overseas, a distorted image of the accident circulated internationally and became entrenched. As pointed out by Sekiya in Chapter 3, this point can be interpreted as a failed case of transition from emergency crisis communication to normal risk communication.

Also from the viewpoint of information dissemination, there were problems in the Fukushima Daiichi Nuclear Power Plant accident concerning the role of the Chief Cabinet Secretary as a government spokesperson, and the issue of information dissemination by ministers and experts. In regard to the new coronavirus that broke out in the beginning of 2020 and the infection on a cruise ship entering the port of Yokohama, Katsunobu Kato, Minister of Health, Labor and Welfare, took the role of government spokesperson. However, his handling of information was neither sufficient for Japanese public nor international community, especially dissemination in foreign languages was extremely poor (in fact, the pitiful English used on the MHWL website became a significant problem²⁴). In spite of the fact that the issue of poor information dissemination in the Fukushima Daiichi Nuclear Power Plant accident remained, bringing about various suspicions and speculations in other countries that subsequently lead to rumors and misunderstandings, there is no evidence that the issues of crisis communication and risk communication have been given serious consideration, and mechanisms for providing information remain unchanged. Many foreign journalists are stationed in Japan, and the content they send plays a major role in shaping international perceptions. However, no innovation has been made in the reporter club system, other information channels or access for foreign journalists. From the point of view of information dissemination, Japan is still in the “Galapagos”, and there is no evidence of any improvement from the lessons learned from the Fukushima Daiichi Nuclear Power Plant accident.

In other words, these issues were treated by the government, regulators, businesses, and the media as domestic problems without thinking of international audiences, which means the lessons from Fukushima Daiichi Nuclear Power Plant accident on public communication has not been learned. The “Galapagosization” of the nuclear power safety system pointed out in the Independent Accident Investigation has remained essentially unchanged since then.

²³ Interview with Goshi Hosono, December 19, 2019.

²⁴ Wada, 2020.

Governance and immaturity in “the shape of this country”

In the Independent Accident Investigation, safety regulation governance and historical/social structure were analyzed as structural causes leading to the Fukushima Daiichi Nuclear Power Plant accident, and the Kantei’s handling of the accident was analysed as a proximate cause. With regard to safety regulation governance, it considered problematic the fact that the fundamental system was a dual one where the government agencies in charge of nuclear power were divided between MITI/METI and the Science and Technology Agency/MEXT, and experts were also split into two groups between the Nuclear Safety Commission and NISA, security regulations being performed in tandem under an ambiguous relationship between the Commission and NISA, pointing out that this complicated and divided system of responsibility created a situation of irresponsibility. In addition to this ambiguity in nuclear governance, it also pointed out that with the anti-nuclear movement adopting judicial tactics, safety regulations took on the nature of regulation for fighting in court and of written safety regulations that focussing on the safety of nuclear power plant hardware.

It also analyzed in detail the actions of the Kantei in its crisis management: the lack of information coming into the Kantei and its leadership in an emergency; how Prime Minister Naoto Kan directly went to the Fukushima Daiichi Nuclear Power Plant and requested they vent; how he bulldozed his way into TEPCO’s head office and castigated its executives, examining the difficulty of leadership in a crisis and organizational response in complex disasters. It commended the expansion of the resident evacuation area and the extraordinary establishment of the Fukushima Nuclear Power Plant Accident Countermeasures Integrated Liaison Headquarters by the government and TEPCO, pointing out the importance of conveying information and integrating command systems. Furthermore, it severely criticized the fact that the Nuclear Emergency Response Headquarters (Nuclear Disaster Headquarters) based on the Act on Special Measures against Nuclear Emergency Response, NISA and the off-site center, that should have acted as its secretariat, did not function at all. It also analyzed the role not only of the SDF but that of other first responders such as the fire department and the police, examining the overall governance capabilities of the government in crisis.

Through these examinations and analyses, the Independent Accident Investigation argued that “the key to government crisis management is how quickly a bureaucracy operating according to routine values can be switched to emergency response”, concluding that “decision making in times of crisis must give priority to flexibility, adaptability, clarification of priorities, redundancy, and top-down decisions. You must get rid of vertical divisions and organizational compartmentalism, integrate resources and authority, and boost capabilities at once”.²⁵ It argued that “the heart of this crisis was that the government lost the people’s trust in the government during the crisis”²⁶, pointing to poor communication throughout.

Have these problems really been solved? Certainly, the Nuclear Regulatory Agency was created as an external agency of the Ministry of the Environment, and the Nuclear Regulation Authority was established as a highly independent “Article 3 Committee”, eliminating the prior duality in nuclear administration and clarifying responsibilities. However, as has been repeatedly pointed out, the ideological background of that governance has failed to escape the framework of “homework style” regulation, leading to the recreation of a “new ‘safety myth’”. Changing the institutional framework does not mean governance has changed. Moreover, by trying too hard to avoid “regulatory capture” in the relations between the regulatory authorities and the business operators, independence for independence’s sake has been strengthened at the Nuclear Regulation Authority, and has failed to lead to governance aimed at bettering safety with the business operators. For judgment on the safety of nuclear power plants, the tendency to rely on the courts has not changed with the Otsu District

²⁵ Independent Investigation Commission on the Fukushima Daiichi Nuclear Accident, 2012, p.394.

²⁶ Ibid., p.395.

Court issuing a suspension order for KEPCO's Takahama Nuclear Power Plant in 2016, which stopped an operating nuclear power plant for the first time. Apostolakis, mentioned above, states, "the only job the court has is to review the process which led to a decision and make sure the process is according to the law. Just to give you an example, supposing the NRC issues a regulation without sufficient interaction with the public. They know you've violated the law because you're supposed to do that. But the court would never say 'oh, the structural analysis of this pipe is not right.' Because the court doesn't know. Okay? The judge will never say 'I'm not convinced it's safe.'"²⁷

Lack of balance between experts and political leadership

Various changes can be seen in the decision-making system centered on the Kantei. As Chijiwa mentions in Chapter 4, improvement can be seen in the information sharing framework and training of the emergency muster team that was a problem in the Fukushima Daiichi Nuclear Power Plant accident. There is no doubt that the establishment of the National Security Secretariat has improved coordination with each security system and crisis management system. Moreover, since the LDP government has been in power since 2012 and the long-standing administration has continued to gain experience in responding to emergencies associated with natural disasters such as the Kumamoto earthquake and heavy rains in Western Japan, the level of crisis management has undoubtedly improved. However, the accumulation of such experience and the concentration of work on certain positions places a heavy load on, for example, posts like the Prime Minister, Cabinet Crisis Control Officer and in particular the Chief Cabinet Secretary, who also plays the role of spokesperson in disseminating information. Although this was raised as a crisis communication issue in the Fukushima Daiichi Nuclear Power Plant accident, far from being improved, authority has become even more concentrated on certain positions. Moreover, under this kind of a decision-making framework that focusses on certain positions, crisis response tends to be influenced by personal leadership, and as such, the Prime Minister should probably participate in crisis management drills during normal times in order to prevent such swings. After the Great East Japan Earthquake, Nobushige Takamizawa, who was in charge of crisis management as Assistant Deputy Secretary-General of the Cabinet Secretariat, expressed concern about the personal nature of leadership saying, "Whether the existing well-trained leadership can be carried over when there is a change of government is an issue. I doubt whether sharing experiences or training a successor can be done smoothly even in the case of a change of administration within the Liberal Democratic Party when they are not usually aware."²⁸

Comparison with response to COVID-19

In the spring of 2020, the COVID-19 crisis broke out. As was the case with the Fukushima Daiichi Nuclear Power Plant accident, this time the phrase "the greatest crisis since the war" is also being used. In fact, Prime Minister Shinzo Abe has stated that this is the "greatest crisis since the war" and its impact on the economy will be "greater than during the pre-war depression".

Moreover, the two share a common fear of an invisible enemy this time as well, invisible radioactivity and an invisible virus, as well as the government seeking behavioral changes from people such as evacuation and planned blackouts/staying home.

Dealing with the new virus crisis has also become a touchstone for seeing whether Japan has really learned the lessons of Fukushima.

The crisis is still underway and judgments at this point need to be made carefully, but as far as the government's response to the crisis so far, some points have been learned and others not sufficiently.

²⁷ Interview with George Apostolakis, January 29, 2020.

²⁸ Interview with Nobushige Takamizawa, February 4, 2020.

One is the establishment of a control tower for determining quick response measures for a “comprehensive optimum solution”. Here, false starts were made – with an upcoming “political agenda” including an April visit to Japan by Xi Jinping and the Tokyo Olympic and Paralympic Games in July, it is conceivable that it was difficult to switch to emergency mode - but the Kantei adjusted immediately appointing the Minister of State for Finance and Economic Policy, Yasutoshi Nishimura, as the minister in charge, and set up a new Coronavirus Infectious Diseases Control Headquarters in the Kantei to embark on a crisis response. The direction of the government was clarified with the establishment of a “experts council” centering on infectious disease experts and a strategy for infectious disease control.

There was a problem on legal authority exists in this context for effectively carrying out crisis governance. The powers given to the Prime Minister differ between the Nuclear Emergency Preparedness Act and the Novel Influenza Special Measures Act. The former is given strong authority and incorporates various policy measures such as the forced evacuation of residents and use of the Self-Defense Forces, but the latter does not have the authority to implement compulsory lockdowns. It grants a limited authority to the government for requesting stay-at-home.

Another challenge was how, in responding to the crisis, to utilize the scientific advice that is indispensable in dealing with the uncertainty of the unknown infectious COVID-19 disease. Here, scientific knowledge and political leadership must work hand in hand. In the Fukushima Daiichi Nuclear Power Plant accident, confusion reigned in the field due to the so-called “Naoto Kan risk”, that is the self-recognition of the Prime Minister as being “familiar with nuclear power” and his impatience over the lack of information, distrust of TEPCO and NISA, the importance placed on input from non-experts and micro management. It was Haruki Madarame, Chairman of the Nuclear Safety Commission, who mainly acted as the Prime Minister’s advisor, but he was given only a limited role of responding only when asked by the Prime Minister. What became an especial problem was communication with the Prime Minister, Kan immediately panicking after he asked “Is there re-criticality?” and Madarame responded “The possibility is not zero” but re-critical situation never happened. This created a distrust of the experts that is sometimes referred to as the “Haruki Madarame Risk”. In COVID-19 case, Prime Minister Abe was initially criticized for his attitude of emphasizing political leadership, such as deciding to close all elementary, junior and senior high schools without consulting with the experts, subsequently attempting to “tie up” with experts. Regarding partnerships with scientists, people’s behavioural changes are actively being urged with not only Shigeru Omi, President of Japan Community Health Care Organization, at the forefront of communicating with politicians and the people, but both Hitoshi Oshitani, a professor at Tohoku University, formerly in charge of SARS countermeasures for Asia at the World Health Organization, and Professor Hiroshi Nishiura of Hokkaido University, representing the cluster tracing team, frequently appearing in the media and disseminating information via SNS and so on.

At the time of the Fukushima Nuclear Power Plant accident, and still today concerning rumors and the issue of contaminated water, the fact that we cannot accurately, rapidly and effectively convey the risk situation to the world remains the same. A typical example is how to deal with the cluster outbreak on the Diamond Princess, a cruise ship anchored in Yokohama Port. Although the Ministry of Health, Labor and Welfare took the lead in dealing with this case, the timing of embarking on action was delayed because it was a foreign vessel, which contributed to the explosive infection on board. In addition, information dissemination at the time was not consistent, and because very little information was conveyed overseas, it was dubbed the “Petri Dish” and treated as an international scandal.

The COVID-19 crisis has not gone away. It is still too early to make a judgement about the government response to the crisis. However, one thing is certain: there is much that can be learned from the response to the Fukushima nuclear crisis regarding how to deal with this crisis.

First responder and the “ultimate question”

Lastly, the issue of first responders discussed by Isobe in Chapter 6 was the subject of investigation and verification in the Independent Accident Investigation, but was not taken up in the Government Accident Investigation or the National Diet Accident Investigation, etc. Regarding this point, no noticeable organizational change or alteration to the activity manual have been seen following the Fukushima Daiichi nuclear accident.

Certainly, the police will be in charge of off-site activities during the evacuation of residents, a new regulatory requirement, and participate in the training, but this amounts only to the police responding to activities required by law rather than proactively learning lessons and addressing them. The Self-Defense Forces are also repentant about the Fukushima Daiichi nuclear accident and have learned lessons from it, but this does not mean that the SDF has redefined its role or mission as a first responder in a nuclear accident. On the contrary, according to the former Nuclear Emergency Preparedness Officer of the Cabinet Office, this issue was discussed with the Ministry of Defense and the Self-Defense Forces, but it was almost taboo to place the “onsite” role of the Self-Defense Forces on the agenda, no deep discussions taking place.²⁹

Needless to say, in the event of a nuclear accident, the operator who runs the plant is primarily responsible for dealing with the accident. Without daily operational experience, it is impossible to understand what is happening where. On-site plumbing and valve locations cannot be known if the SDF or police suddenly enter the site. In that sense, it is natural for the operator to bear primary responsibility for the response.

However, the problem is the “worst case”, when the operator loses control and lives must be put at stake to halt the progress of the nuclear accident to protect the people and the nation. At that time, the ultimate question is who will be responsible for ending the worst case incident and who will do the job? This has not been addressed in discussions or in the debate over restarting nuclear reactors, and there is no public consensus or decision by regulatory regimes, political leadership or public.

It is assumed that the operator, which runs the plant, is a private company under the “national policy/privatize operation” framework. It is difficult to oblige employees who work for and are contracted to private companies to put their lives in the balance to stop the nuclear power plant and protect the nation and the people. In Chapter 6, Isobe examined the establishment of a legal system similar to the Mariners’ Act, but concluded that it would be difficult to enact such a law on the assumption that nuclear power plant operators would run away.

The aforementioned Casto noted that while it was difficult to request civilian operators to put their lives on the line and do the job, in the United States, NRC inspectors lived near the nuclear power plant sites with their families, and being local residents, they couldn’t leave; their job was to stay in an emergency and work to stop the accident³⁰. Apostolakis also said that even if the President showed an interest in dealing with the accident and would like to intervene directly, he would not be able to give orders to the operator, that the principle is that the utility has authority, the control room operators are the absolute masters.³¹

²⁹ Interview with Hashimoto and Yuzawa, November 29, 2019.

³⁰ Interview with Charles Casto, August 26, 2019.

³¹ Interview with George Apostolakis, January 29, 2020.

There is no ready-made answer to this “ultimate question”. However, if a severe accident develops and both the safety of the state and the people will be lost if it is not stopped, and if someone has to place their life on the line to do the job, one supposes the operators, who know the site inside out, and the SDF, whose members pledge “to face events without regard to risk, to strive to the utmost of my abilities to complete the assigned tasks, and to respond to the will of the people”, would cooperate in some form or other. While it is the role of politics to make the final decision, at least assuming that such a situation may occur, if the operators and the SDF do not plan and prepare for such a time, they will have to perform extremely dangerous tasks in the absence of any “preparedness” when and if the government makes the call.

And as a state, it must decide what compensation, rewards and penalties, commendations as well as damages should be put in place for those who will be in the forefront of these duties, and how they will be rewarded. In this way, it is time for us to determine the “shape of this country”.

No one wants the worst to happen. Nevertheless, preparing for the worst situation was the greatest lesson of the Fukushima Daiichi nuclear accident. And it continues to be its greatest lesson.

Summary Achieving both “great safety” and “small peace of mind”

Viewed this way, it can be said that “learning” from the last ten years has been ardent about eliminating “proximate causes” of the accident, but diffident about overcoming “remote causes”.

To repeat, the remote causes are the “homework style” regulation that created the “safety myth”; the “village and governance of osmosis” of the electric power industry, which still wields strong political power; the practice of “national policy/privatize operation” that causes ambiguous responsibility and the inertia of TEPCO's corporate culture; the lack of risk communication; the “Galapagosization” psychology that is devoid of a sense of participation in building safety regulations in tandem with the world; and the immaturity of a “national security state”³² that avoids facing front on the “ultimate question”.

Why haven't these “remote cause” been removed?

Casto commented, “so we did FLEX [storing equipment for emergency] that covers the last war, which was Fukushima, but what's the next war? And that's the imagination thing. I think the failure of imagination is one of your lessons learnt. So, what's the next big thing? Our judgement is black sky. Because of hacking and all that.”³³ His point is that the visible “proximate causes” of hardware-related accidents are dealt with, but there is a lack of imagination when contemplating invisible, software-related “remote causes”.

However, perhaps an even greater reason behind this impossibility of overcoming “remote causes” is the distinctive and essential nature of Japan's socio-political psychology probed in the Independent Accident Investigation that places the same value on and integrates “small peace of mind” and “great safety”.

Here, “peace of mind” is sought rather than “safety”. It is easy to take actions that are unnecessary for “safety” but necessary for “peace of mind”. It may at times be inconsistent, and it may undermine

³² Hosoya, 2019, pp.16–29.

³³ Interview with Charles Casto, August 26, 2019.

what is necessary for “safety”. In the Independent Accident Investigation, these socio-psychological dynamics were described as “prioritizing small peace of mind and sacrificing great safety”. To press the point, what remains the most unchanged in the last ten years is the failure to create the best shape of risk, governance, and leadership to preserve the security of society as a whole.

In this regard, Yotaro Hatamura, professor emeritus at the University of Tokyo and who served as chairman of the Government Accident Investigation, stressed during his interview, “They talk about safety and peace of mind in one breath, and confabulate them in everything they do. It's good to strive for safety, but striving for peace of mind is no good. Striving for peace of mind will lead you to ignore risk.”³⁴

After the Fukushima Daiichi nuclear accident, Japan announced far and wide that it would enforce “the most stringent regulations” in the world, which seems to have resulted in providing “peace of mind” to the people and recreating a “new ‘safe myth’ ”.

In order to escape this “homework style” society and continue to endlessly pursue “safety”, “objective-driven” regulations must be introduced, regulators and operators engaging in dialogue to create common goals, thinking by themselves how to achieve those goals, and making nuclear safety regulation seek ever better arrangements. In order to achieve that “safety”, operators must switch to a business that provides their customers with “peace of mind” by enhancing “safety” through the creation of a new corporate culture out of the old mentality of regional monopoly and general cost methods that fits the deregulation of the electricity industry. And that dialogue must also include the Japanese people and the world. It is by breaking away from “Galapagos” and becoming a state and operators that can speak of nuclear safety in their own words that will regain the trust lost in the Fukushima Daiichi Nuclear Power Plant accident and heal the scars that remain in the international community. To support of this, nuclear safety governance and a system of governance that can cope in an emergency with accidents without running away from the “ultimate question” have to be established

Only then will “great safety” and “small peace of mind” be compatible and harmonious.

³⁴ Interview with Yotaro Hatamura, September 18, 2019.

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