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REPORT

The Canon Institute for Global Studies
The study group on “Nuclear and Law”
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Contents

Chapter 1　Our Activity

I　The Purpose of The Study Group

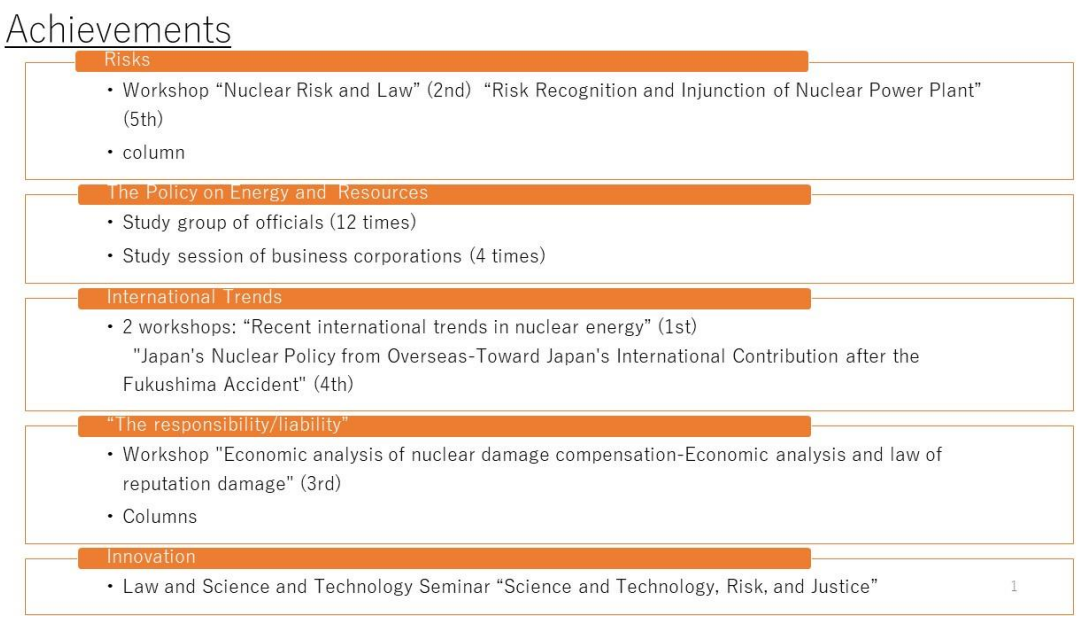
The Study Group for Nuclear and Law (“The Study Group”, as mentioned below.) has studied, considering nuclear and law as issues (“The Study”, as mentioned below), since April 2015.

The purpose of the Study Group is as below. Technological development not only provided the benefit for human, but also made the risk. Such risks making use of technological development has, of course, become serious problems for our modern society. However, there are various ways of dealing with or discussing about them. The Study Group discussed from legal viewpoint, and specifically, from the perspective of legal systems. That is, we focused on nuclear technology as the type of technology, and studied legal issues related to the policy on the risks making use of nuclear technology to indicate that we tried to apply technology development for the risks.

II　The Study Group’s Activities Overview

The Study Group’s activities overview is as mentioned table 1-1.

< Table 1-1: Our Achievements>



III Theme of this Study Group

The Study Group has, especially, studied six main themes/keywords; (i)Risk, (ii)Technical Innovations, (iii)International Trends, (iv)Where “the responsibility/liability” lies, (v)The policy on energy and resources, (vi)Incentive to investments:

(i)Risk:

Risk has, of course, various definitions and contents. However, the risks of the technological development, above all, those of life and body is very important theme because they threaten our fundamental value. The Study Group has considered such as workshops twice whose theme is mainly the risk.

(ii)Technical Innovations:

We considered what the legal system contributes to the technical innovations should be, because we considered on the risks of technological developments. For example, the Study Group considered the technical development of Small Module Reactor (SMR) at workshops.

(iii)International Trends:

Not only nuclear technology but also technology is not limited by boundaries, develops globally, and legal system develops globally through treaty or others. That’s the reason this study group has taken in global trends throughout the experts of international organizations like OECD’s experts on the atomic energy law, at the same time, has aimed for international contribution.

(iv)Where “the responsibility/liability” lies?:

When the accident, especially, the extremely large-scale accident such as Fukushima Daiichi nuclear disaster broke out, it is natural to raise the voices about “responsibility”. However, there is little what “responsibility” means is spoken consciously. Multifarious “responsibilities” such as political responsibilities, social responsibilities and others are, consciously or unconsciously, mentioned as quite broad meanings by advocates and the context. It would be meaningful to consider all of them, considering at least from the perspective of “responsibility” in the legal field is equally meaningful.

(v)The Policy on Energy and Resources:

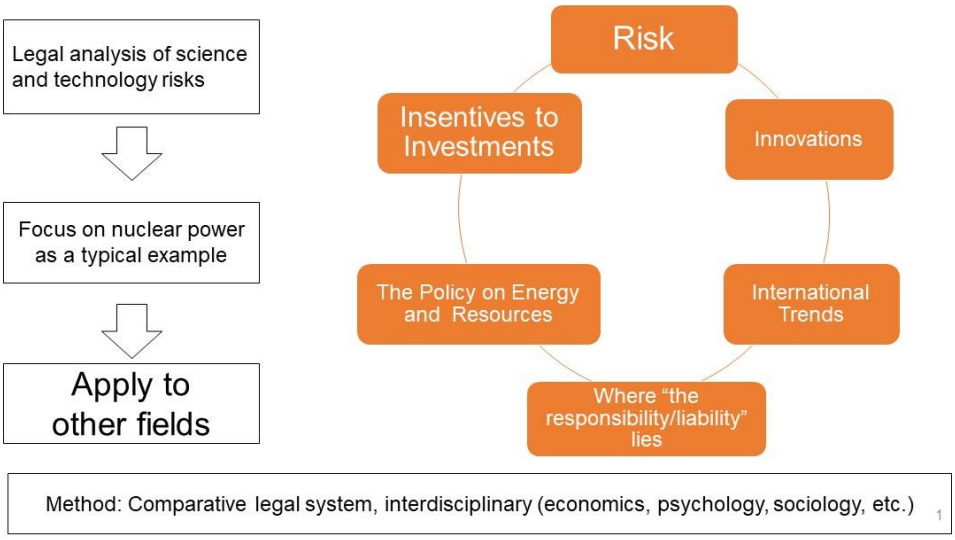
As long as the legal system related to nuclear technology is considered, aspects as part of resource and energy policy cannot be ignored. Therefore, this study conducted a study meeting with policy makers and business operators.

(vi)Incentive to Investments:

Nuclear technology, especially power generation, is carried out as a private business. In particular, nuclear power generation needs so large amount of investment that viewpoint of funding from the market is indispensable.

In considering these themes, for the moment, Japanese Atomic Energy Compensation Law was considered as a cross-sectional object. The Nuclear Compensation Law (hereinafter referred to as the Act) covers the occurrence of a nuclear accident, the characteristic of the use of nuclear technology. Furthermore, a revision of the Act on Compensation for Nuclear Damage is scheduled around 2018, it is also a good opportunity to ma proposals regarding the revision (the recommendations regarding the revision of the Act were described in Chapter 2, Sections 4 and 5).

<Figure 1-2: Research Theme>



IV Approach of this Research

In considering the above, the Study Group adopted a comparing approach (comparative law) of legal systems with foreign law and an interdisciplinary approach (economics, psychology, sociology, etc.). The comparison with foreign laws is useful for understanding the orientation of Japan's own system as well as referring to international trends. Moreover, an interdisciplinary approach such as economic analysis of law was adopted because there is a limit to the interpretation of law alone.

V Conclusion and Structure of this Report

In conclusion, we got two messages in this study. First, “From Retroactive Remedy to Prevention”. Previous damages were intended to be compensated later with money if rights were infringed. However, at least for large-scale accidents such as nuclear accidents, we think it is necessary to focus on accident prevention in advance. The second is, “From Right to Human”. Until now, compensation has been based on the “right”, and we have considered compensation for damages starting from the right (compensation approach). However, considering the nuclear accident, I think it is necessary not only to compensate for the infringement of rights, but also to pay attention to what is necessary as “human” for the victim who suffered the disaster due to the nuclear accident (Disaster Rescue approach).

In chapter 2, we considered these two messages (Section 1).

First, Sections 2 and 3 relate to the first “From Retroactive Remedy to Prevention”. In relation to nuclear damages, we considered it is possible to add not only retroactive remedy but also a precautionary point of view in relation to the objective provisions of Article 1 of the Act (Section 2). Next, with regard to negligence, which is regarded as an important pillar in the nuclear compensation system, we analyze with the knowledge of economics whether or not it is possible to make the liability as negligence (Section 3).

The second “From Right to Human” message was discussed in Sections 4 and 5. First, we discussed the need to adopt a disaster remedy approach rather than a right remedy (Section 4).

Furthermore, as a specific example of legislation based on the disaster rescue approach, we would like to consider what the so-called temporary payment system, which was established in the revision of Japanese Atomic Energy Compensation Law in 2018, should be organized by the disaster rescue approach(Chapter 2 Section 5).

In addition, the future of the Study Group's activities is prospected (Chapter 3).

Chapter 2. A Direction of the Nuclear Compensation System

Section 1. Two Messages: “From Retroactive Remedy to proactive prevention” and “from rights to human”

In this Chapter 2, we consider the following two messages: “from retroactive remedy to proactive prevention” and “from rights to human” (see the figure on the next page).

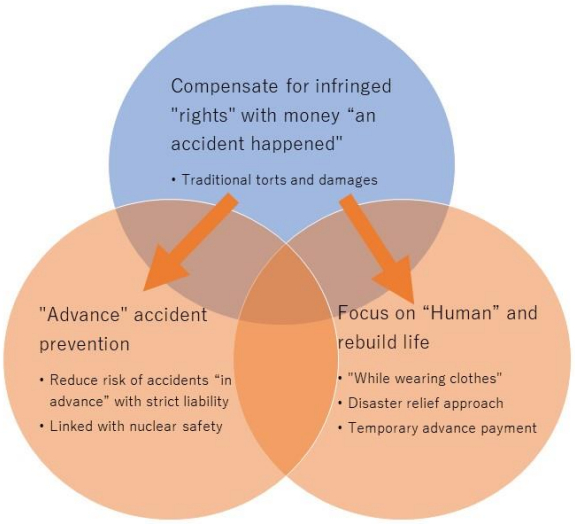
Firstly, compensation for damage under general tort was traditionally intended to financially compensate for any infringement of right or legally protected interest subsequently (retroactive remedy). We believe, however, that at least with respect to a large-scale accident such as a nuclear accident, it is primarily necessary to place more emphasis on proactive prevention of an accident, in addition to retroactive remedy. We call this the “from retroactive remedy to proactive prevention” approach. Thus, by adding a standpoint of proactive prevention of an accident, compensation for damage under general tort will have a nexus with the nuclear safety regulations that have always conventionally been considered to belong to the administrative law and to have nothing to do with compensation. In the pages that follow, we will present that the purposes of the Act on Compensation for Nuclear Damage (the “ACND”) may include deterrence of an accident, in addition to remedy of victims (Section 2). Then, using the methodologies of law and economics, we will question whether nuclear compensation that is characterized by the strict liability on the part of a nuclear operator is essential – in other words, whether a nuclear operator can be held liable for negligence – and will present that the nuclear operator cannot be held liable for negligence because of the nature of nuclear compensation (Section 3).

Secondly, compensation for damage has always been considered as something like coverage of damage, based on the existence of “right” that is a kind of somewhat fictional concept. Such an approach may be called the “compensation approach.” By contrast, considering the nuclear accident, especially the situation of the victims after the Fukushima Daiichi Nuclear Power Plant Accident, we would need to pay attention to what the victims who suffered damage by the nuclear accident require as “human,” in addition to financial compensation for infringement of their rights. We will call this the “disaster remedy approach.” Our research is an attempt to apply this approach to the nuclear accident and the ensuing scenes of disasters and evacuations, while such approach focusing on “human” has generally been discussed under civil law.

Our Two Messages

① From “Right s ” to “Humans”

② From “Remedy” to “Prevention”



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Section 2. From retroactive remedy to Proactive Prevention: Purpose of the Nuclear Compensation

The purpose of the ACND is “sound development of the nuclear business” in addition to protection of victims. In the subsections that follow, as legal means of securing the safety of reactors (deterrence of a nuclear accident), we organize the stipulations of the purpose of compensation for nuclear damage given that compensation for damage is also an important legal means, together with administrative and regulatory means such as the safety regulations specified in the “Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors” (the “Reactor Regulation Act”), and then enter into discussions toward a new interpretation of “sound development of the nuclear business” from the standpoint of deterrence of an accident.

I. Purpose of the ACND

Article 1 of the ACND stipulates that “The purpose of this Act is to establish the basic system on compensation for damage when a nuclear damage is caused by the operation, etc., of a reactor, thereby protecting victims and contributing to sound development of the nuclear business.”

Of this stipulation of the purpose, it is almost agreed upon that “protecting victims” is intended to recover the damage suffered by those victims of the nuclear accident through compensation for damage (coverage of damage). By contrast, there is necessarily no consistent view on the purpose of “contributing to sound development of the nuclear business.” Given this, we first verify how the purpose of “contributing to sound development of the nuclear business” has been construed. For this, the following two views are prevalent.

1. Theory for the Predictability of the Amount to Be Compensated

There is a view that “contributing to sound development of the nuclear business” referred to in Article 3, paragraph (1) of the ACND means that the national government expressly shows that it will positively subsidize the burden of compensating a huge amount of damage in a unforeseen situation in order to give the operators a certain predictability, thereby driving sound development of the nuclear business. Considering the subject of the “predictability” referred to in this view, it would be natural to read, on the grounds that this view questions who will compensate damage, that it means the amount to be compensated by the nuclear operator can be predicted (theory on the predictability of the amount to be compensated).

However, such a view is problematic as discussed below:

Firstly, if the purpose of the nuclear compensation system is based on the predictability of the amount of damage, it must be accompanied by the stipulation of the amount of limit on liability of the nuclear operator (limited liability).[1] In other words, in order to say that the amount of damage is predictable, the ACND would

[1] In Japan, there is no limit of compensation amount when a nuclear accident occurs.

need to contain a provision that the liability of the nuclear operator for compensation for damage shall be limited to the sum of XX yen. However, Article 3, paragraph (1) of the ACND provides that if a reactor is under operation, etc., and such operation, etc., causes any nuclear damage, the nuclear operator conducting such operation, etc., of the reactor shall be held liable for compensation for the resulting damage. There is no provision of the limit on liability, as opposed to the nuclear compensation laws of foreign countries.

Secondly, the theory on predictability of the amount to be compensated is based on the assumption that compensation for nuclear damage is a special provision of the tort law. However, given that the purposes of general law and special law are often common, there are few views that mention that the purpose of the tort law is to enable an enterprise injurer to predict the amount to be compensated. If it is because compensation for nuclear damage is exceptional, it is necessary to demonstrate in what aspects it is exceptional and for what reasons the limit on liability should be justified, but such demonstration seems to have not been made. Namely, the grounds for justification could not be demonstrated, although the need of the nuclear operator to predict the amount to be compensated can be demonstrated.

Thirdly, if the deterrence of an accident is at least recognized as one of the functions of the ACND, limiting the liability of the nuclear operator would deteriorate the function of deterring an accident. This is why such activities will become excessive, as it is meant that some of the external cost of the compensation for damage due to its tort is not appropriately internalized.

If the word “predictability” is used in the field of law, it usually refers to the significance of negligence, which means that the occurrence of an outcome was not avoided, although it was predictable. It is necessary to note that what is predictable is the fact that an outcome occurred, not the amount to be compensated on which the above-mentioned theory is based.

2. Theory for Avoidance of Bankruptcy of a Nuclear Operator

Some argue the purpose of “sound development of the nuclear business” from the standpoint of avoiding bankruptcy of a nuclear operator. That is, compensation for damage is substantially equivalent to limiting liability up to the positive property of an operator. This argument also reflects that if the amount of compensation for damage to be borne by the nuclear operator becomes huge and the operator goes into bankruptcy to pay such huge damage, it may result in a situation in which the victims could not receive sufficient levels of damage.

This view, however, would eventually be intended for protection of victims. That is, this view does not interpret that the purpose of the ACND is to avoid bankruptcy of nuclear operators, and it is consistently intended for protection of victims when any nuclear operator goes into bankruptcy.

Therefore, preventing bankruptcy of nuclear operators is a secondary product, and we believe that the significance of the purpose of “sound development of the

nuclear business" in addition to protection of victims still needs to be questioned once again.

Thus, any one of the conventional interpretations of "contributing to sound development of the nuclear business" would be disputable.

II. Compensation for Nuclear Damage as a Mean to Secure Safety (Deterrence of an Accident)

Turning over the viewpoint, no one would object that it is an important issue to deter a nuclear accident and secure nuclear safety. Operation of a reactor is structured by the national government to secure safety through safety regulations under the administrative laws. Notwithstanding this, we believe in this report that it is necessary to secure safety through a mechanism of compensation for damage. The reasons are described below.

Firstly, many of dangerous activities such as nuclear power generation cannot be fully controlled solely by imposing a liability for compensation for damage. This is because damage that might arise is often huge in comparison with the assets in possession of an actor in light of the financial capabilities of an injurer, and incentives to deter an accident are sometimes not enough. For example, if an accident takes place in a certain nuclear power plant, it would cause tens of thousands of people serious amount of damage, which would fully exceed the assets of the owner of the relevant power plant.[2] If this is the case, there is an incentive for the nuclear operator to refrain from controlling an occurrence of accidents against a backdrop of the deficiency of its financial capabilities.

Secondly, it is less likely that the government has adequate information on activities in connection with which any accident is threated to take place. For this reason, the government is addressing this issue by restricting its regulations on undesirable activities, as a result of which the targets of the regulations would be too inadequate.[3]

Thirdly, even if the government has information on many of dangerous activities that may pose risks, it is practically not easy to regulate them, and the government tends to restrict its safety regulations to certain types of activities. While the activities of the operators change from time to time, the government is saving operating cost to intervene or inhibit those activities by concentrating its regulations on matters that can be easily inspected, such as whether any particular equipment is installed, not those activities themselves.

Thus, only the administrative regulations by the government are insufficient as the legal means for safety regulations.

It is broadly known that compensation for damage can be a legal means to deter any accident. That is, if an operator (injurer) is given an incentive to deter any accident through a liability for compensation for damage when the operator causes any accident, it will be possible to deter an accident through the operator's voluntary effort.

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[2] Shavell, Steven, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p. 677.
[3] *Supra,* Shavell, p. 684.

Therefore, a structure will be built up in which collaborating the administrative safety regulations with compensation for damage under tort will lead to a means to secure safety. It is even more in the case of any business for which the financial impact is especially large, such as the nuclear business. If this is the case, it is not reasonable to simply interpret the purpose of the nuclear compensation system as coverage of damage.

III. Significance and Interpretation of "Sound Development of the Nuclear Business"

1. What does "sound development of the nuclear business" referred to in Article 3, paragraph (1) of the ACND mean? In this regard, it is interpreted as if the theory on the predictability of the amount to be compensated had emphasized the sound "development" of the nuclear business. However, more attention might be paid to the aspect that the purpose of the ACND is "sound" development of the nuclear business, not development of the nuclear business.

And, the nuclear business entails any special risk of direct harm caused by any operational accident occurring at a certain statistical frequency as unscheduled operating process arising out of a functional failure in the facility or any other external cause. What is necessary in doing the nuclear business that entails such a special risk is not simply the development of the nuclear business. It should be the development of "sound" business that contains any system to deter an accident. Therefore, "sound development of the nuclear business" would be to promote the nuclear business while securing the safety of the nuclear business (i.e., operation of a reactor). Based on this thought, it would be possible to adopt a standpoint of securing safety, or deterring an accident, while promoting the nuclear business.

2. Relationship with Protection of Victims (Coverage of Damage): A New Direction

Organizing the relationship of the deterrence of an accident with the coverage of damage that is another purpose specified by the ACND, it can be separated by whether it is before or after the accident occurs. The purpose of the ACND would be to protect victims through the coverage of damage after the accident occurs. By contrast, it would be to deter a nuclear accident and secure nuclear safety before the accident occurs.

3. Real Intention of "Securing the Predictability"—Avoidance of Risks of Nuclear Operators

Discussing from the standpoint of whether a nuclear operator is risk averse or risk neutral, the real intention of "securing the predictability" would mean a request for protection of risk aversion of a nuclear operator. That is, on the one hand, it can be seen in the case of compensation for nuclear damage that a nuclear operator is risk averse, because of the hugeness of harm of a nuclear accident once it occurs, although the probability of the occurrence is relatively low. For comparison, in the case of any business without such a special nature, the amount to be compensated when an accident occurs will be relatively small

and operators of such business are risk neutral.[4] On the other hand, in the case of an ordinary accident other than the nuclear accident, the operators will avoid the risk by purchasing and maintaining liability insurance; however, it is practically impossible to purchase such insurance to compensate for nuclear damage. The theory on the predictability of the amount to be compensated would use the predictability in the scene of the purpose of the nuclear compensation system in order to help the nuclear operators to realize risk aversion. In other words, the real intention of the view of taking the purpose of the nuclear compensation system as securing the predictability of the amount to be compensated by a nuclear operator would be to help such nuclear operator to avoid the risk, or to seek risk aversion by setting an upper limit on the liability of a nuclear operator.
In this regard, there is no objection in that it is important for development of the nuclear business to secure the predictability of nuclear operators. However, it is assumed that securing the predictability of nuclear operators and helping them to avoid risk will be achieved through establishment of appropriate amounts of financial security, governmental support or otherwise under the nuclear compensation system, and those could not be said to be the purpose of the nuclear compensation system. It can be thought that those may eventually serve to increase the predictability of the amount to be compensated by a nuclear operator.

[4] *Supra,* Shavell, p.684.

Section 3 Negligence vs. Strict Liability: Economical Analysis of Nuclear Compensation

What are the consequences of the system design emphasizing ex-ante precautions in addition to retroactive remedy and deterring accidents for the purpose of Act on Compensation for Nuclear Damage? In the following, we will consider the choice of negligence and strict liability for nuclear compensation.

In the event of a nuclear accident, the nuclear operator shall be strictly liable (Article 3 (1) of Act on Compensation for Nuclear Damage). This is one of the features of the nuclear compensation system. The grounds for strict liability are that it is an excessive burden to prove the victim's negligence, and that victims need to be compensated. In light of these grounds, if it is easy to prove the negligence of the nuclear operator, or if victims can be remedied by other means, in the nuclear compensation system, it is also possible to design a system in which the nuclear power operator is liable (not liable if there is no fault).

However, in the following, in the nuclear compensation system, there is little room for choosing negligence, and strict liability is, almost logically a priori, required.

Ⅰ Legal Interpretation of the Past

We will check Japanese legal interpretation (below 1) and US legal interpretation (below 2). Also, we will discuss corrective justice, mainly discussed in the United States (below 3).

1 Japanese legal Interpretation

To this point, the positive and substantive reasons for adopting strict liability are that nuclear compensation liability is based on the principle of Liability on ultra-hazardous activity. Liability on ultra-hazardous activity generally means the legal responsibility that "the person who controls ultra-hazardous activities and things must bear the damages that arise from them".

The substantive grounds for such liability lie in the fact that the operation of a technology facility contains “special risk”. “Special risk” refer to a high degree of danger that cannot be fully controlled by us. In the process of operating technical facilities, means of operation, and energy sources, as a result of unscheduled operation due to facility malfunction or outpatient intervention, direct damage due to operational accidents occurs at a certain statistical frequency (high risk). On top of that, because of the high degree of risk and the inability to control, even if there is no negligence/fault after exhausting the duty of caution and conduct from a hazard that contains special dangers, accidents in operation will occur with considerable frequency. As long as the negligence/fault liability is applied here, the purpose of the tort law to protect the infringed rights and legal interests will be hollowed out. Therefore, as for the special hazard at the dangerous source, as such, the risk will be allocated to the person who creates and maintains the hazard is assigned a special hazard associated with the hazard with general control over the hazard (a type of warranty).

Here, the operation of nuclear power plants falls under the typical “special danger”. Therefore, in the interpretation of Japanese law, nuclear damages are required to be negligence based on ultra-hazardous activity liability

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2 US legal interpretation

In the United States, no fault liability (Strict Liability) is explained as follows. To justify a conduct is negligent, if it is an act that is ultra-hazardous, it may be prohibited in the first place. However, even unusually dangerous activities have social benefits commensurate with them. For example, dynamite explosion is certainly an extremely dangerous activity, but it is too inefficient to excavate with pickels or shovels. Therefore, without banning, we apply the liability of no fault and make the costs of those involved in those activities.[5] In addition, the Second Restatement § 519 states that a person engaged in an unusually dangerous activity are liable for compensation, even if one shall take maximum care to prevent damage to any person's body, real estate, or personal property against damage caused by such acts.[6]

Under US law, compensation for nuclear damage is a type that falls under “Negligence” and clearly corresponds to “Strict Liability” as abnormally dangerous activities.[7]

2 Corrective Justice

Mainly in the US, from the viewpoint of ethical and philosophical emphasizing corrective justice, some discusses the following discussions on strict liability and negligence, as follows.

On one hand, with regard to negligence, because modern society depends on dangerous activities, many risks are not considered to be imposed by one (injurer) on the other (victim), rather, considered that injurers and victims were jointly created.[8] On the other hand, the defendant must be regarded as unilaterally risking others so as to base strict liability (result liability). In this case, it can be said that the person who manages the danger creates the danger. Responsibility can be imposed only on the basis that it was involved in the activity and caused damage. In addition, this responsibility is a risk that is unilaterally imposed from the perspective of the entire activity, rather than from the viewpoint of specific attention paid.[9]

Ⅱ Strict liability vs. negligence

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[5] Joseph W. Glannon, *The law of Torts*, Aspen, 5th ed. 2015 p.326

[6] Joseph W. Glannon, *The law of Torts*, Aspen, 5th ed. 2015 p.326

[7] W. Page Keeton, Dan B. Dobbs, Robert E. Keeton, David G. Owen: *Prosser and Keeton on the Law of Torts*, 5th Edition (St Paul, MN, West Publishing, 1984) p.558

[8] Stephen Perry, *Responsibility for Outcomes, Risk, and the Law of Torts, in Philosophy and Law of Torts* (Gerald J. Postema ed.,2001) p.72

[9] *Supra,* Perry, p.75, p.144

In the economic analysis of the accident law, as a premise, the goal for society is to maximize the utility obtained by injurers by engaging in the activity, minus the total costs of care and the expected damage amount due to the accident (minimizing social costs, maximizing social utility). This is because it is necessary to make effective use of limited and rare goods. From this viewpoint, the following analysis will be made as to whether it is strict liability or negligence to be suitable to achieve social goals.

First of all, the nature of the nuclear accident is classified based on whether it is a bilateral accident or a unilateral accident. Unilateral accident means the harmful results in which either injurers or victims have an impact on the possibility of the outcome or the seriousness of the outcome, but both injurers and victims did not want to occur.[10] There can be seen in nuclear compensation, not only unilateral accidents but also bilateral accidents. As an example of a unilateral accident, there are cases where a person has been externally exposed and injured by radiation, and a person has been displaced from their home due to an evacuation instruction accompanying a nuclear accident. However, most of the infringements resulting from nuclear accidents are considered as unilateral accidents. First, unilateral accidents we start to consider below.

1 Levels of care for unilateral accidents

In the case of unilateral accidents, under the rules of strict liability, injures must pay for all accident losses that they cause. And because injures will seek to minimize their own total costs, they will select the socially optimal level of care.[11] On the other hand, under the negligence rule, an injure is held liable for the accident losses he causes only if he was negligent (only if his level of care was less than a level called due care), so the will choose the optimal level of care.[12] In this way, both strict liability and negligence lead to socially optimal behavior. However, strict liability is superior in the following respects.[13]

First, under strict liability rule, if there is a dispute about the existence of responsibility, a court need only determine the magnitude of the loss that occurred, whereas under the negligence rule a court must determine the levels of care actually taken and the socially optimal levels of “due care” (The latter needs to determine the costs and the effectiveness of taking different levels of care.)

Second, there is more than one dimension of an injurer’s behavior (for example, a driver’s speed and the frequency with which he looks at the rearview mirror, etc.). Here, under strict liability an injurer would be led to choose optimal levels of all dimensions of care, because his goal would be to minimize his expected total costs. But under the negligence rule, that are incorporated in the “due care”

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[10] Shavell, Steven, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p. 677.

[11] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p 6

[12] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p.7

[13] Steven M. Shavell, *Strict Liability versus Negligence*, (Journal of Legal Studies 9, 1980), p.1, *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p.181-182

standard, and about some dimensions of care, courts would face difficulties in ascertaining them (for example, they could not ascertain the frequency a driver usually looks in his rearview mirror.) or in determining proper behavior in respect to them.

2 The levels of activity unilateral accident

In addition to the levels of care, the levels of activity also affect the behavior of the parties. The levels of care have to do with the precautions he taken when engaging his activity (such as slowing for curves), whereas the levels of activity mean whether, or how much, an injurer engages in a particular activity, or how long one has been (for example, how far one drives a car).[14] Regarding the relationship between the levels of care and the levels of activity, the rule with the optimum levels of care is identified as the order of examination, and the optimum rule is analyzed from the viewpoint of the levels of activity.[15] From the viewpoint of the levels of activity, the strict liability rule is superior. That is, from the viewpoint of the levels of activity, under strict liability or negligence, they will thus choose the optimal level of care.[16] In contrast, under negligence an injurer performs too much.

3 Risk aversion of the parties and the impact of the insurance system

The above was considered on the assumption that the parties were risk neutral. However, one or both injurers/victims may be risk averse.

Here, “risk aversion” describes an attitude of dislike of pure financial risk.[17] A person will be risk averse if the marginal utility of money to him declines as his wealth increase. This is because for such person, losing amount of money will reduce his utility more than gaining the same amount of money will increase his utility. If the parties are risk averse, by attaching liability insurance (in the case of the injurer) or non-life insurance (in the case of the victim), diversify risks and lead to optimal results for society.[18]

The following are considered separately: (ⅰ) When there is no liability system and insurance system, (ⅱ) When there is only a liability system, or (ⅲ) When there are both a liability system and an insurance system.

（ⅰ）when there is no liability system and insurance system

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[14] ,*Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p.194-195

[15] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p.196

[16] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p 224

[17] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p 258, refer to Steven M. Shavell, *On Liability and Insurance*, (13 Bell Journal Economics, 1982), p.120,

[18] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p 258

Because victims will not be able to obtain judgements from injurers in the absence of liability, they will be left bearing risk. And because there is no insurance system and victims are risk-averse, it is not socially optimal.[19]

(ii) when there is only a liability system,

If there is a liability system, injurers try to reduce the risk because of the liability, but the risk allocation depends on whether it is strict liability or negligence.

First, under the strict liability rule, if injurers are risk neutral, their bearing of risk will not matter will be socially optimal. On the other hand, if injurers are risk-averse, the outcome will not be socially optimal because injurers will bear the risk. Moreover, they may be led to exercise excessive care to avoid liability. In addition, for these reasons, injurers may be undesirably discouraged from engaging in an activity.[20]

In comparison, the situation is quite different under the negligence rule. In other words, injurers will not bear risk provided that they take due care and that the courts can accurately assess them. The levels of care and the levels of activity are socially optimal. However, the victim will bear damages. Therefore, social welfare is not at an optimal level if the victims are risk averse and not insured.[21]

(iii) When there are both a liability system and an insurance system

Under strict liability, victims are implicitly insured by the legal system and need not take the risk, so injurers take the risk. Therefore, injurers can disperse the risk through liability insurance, which is socially optimal.[22]

Under the negligence liability rule, injurers will tend to take due care even though they can buy liability insurance, and that will be socially optimal. Moreover, because injurers tend to take due care, victims will bear the risk of losses and will purchase accident insurance if they are risk averse. That will be socially optimal.[23]

From the above, assuming there is a risk-averse party, if both a compensation system and an insurance system exist, regardless of strict liability or negligence, it will be socially optimal.

3 Operating cost

In the compensation system, there is an operating cost, that is, a judicial expenditure or other expenditures borne by the parties when an accident occurs. Such costs also need to be considered in terms of maximizing the benefits of society as a whole. In terms of operating costs, comparing strict liability to negligence, on one hand, the total number of claims for damages is more liable

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[19] *Supra,* Shavell, *On Liability and Insurance*, (13 Bell Journal Economics, 1982), p.110, *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p 258

[20] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p 260

[21] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p 260

[22] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p 262-264

[23] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p 264-265

for strict liability than for negligence. This is because, in the case of strict liability, it is reasonable to make a claim whenever the amount of damage exceeds the cost of the procedure because the victim does not have to prove negligence. On the other hand, in the case of negligence, there is much room for disputes leading to lawsuits, so the operating cost per claim for damages is higher for negligence. Therefore, from the viewpoint of operating costs, the superiority of strict liability and negligence cannot be determined a priori.

Ⅲ Economic Analysis of Nuclear Compensation

Next, the economic analysis on the accident law examined in above Ⅱ is applied to nuclear compensation. First, we analyze whether strict liability or negligence is superior for each of the cases (i)Levels of care, (ii) Levels of activity, and (iii)When the parties are risk averse. In addition, we will analyze the operating costs for nuclear compensation.

1 Levels of care

As mentioned above, strict liability is superior to negligence from the viewpoint of the levels of care. Therefore, strict liability should be adopted for nuclear compensation.

2 Levels of activity

Considering contributory negligence, the strict liability rule + the contributory negligence rule will result in higher social welfare if its disadvantage – that victims engage too often in their activity - is not as important as the disadvantage of the negligence rule that injures engage too often in their activity. That is, strict liability will result in greater social welfare if it is more important for society to control injurers' levels of activity than the victim's.[24]

Applying to nuclear compensation, the victim's activities are to live peacefully as a citizen and to do business activities peacefully. By contrast, the activity of injurers is to generate electricity using nuclear energy. If so, it is clear that it is more important for society to control levels of the activity of injurers than that of victims.

Therefore, from the point of view of levels of activities, the negligence should be adopted.

3 Risk aversion and insurance

Next, we analyze from the perspectives of risk aversion and insurance. After considering whether nuclear operators are risk-neutral or risk-averse, compare the degree of risk aversion between injurers and victims. In conclusion, even if a nuclear operator is risk averse, it is not assumed that the degree of risk aversion is greater than that of the victim, and the risk aversion of victims is given priority.

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[24] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p 202

(1) Are nuclear operators avoiding risks?

First, we analyze whether nuclear operators are risk-averse.

To this respect, risk aversion is most relevant in situations in which losses would be large in relation to a person's assets and thus would impinge substantially on his utility. Individuals are typically viewed as risk-averse actors in relation to serious accidents, as these would be likely to cause losses that are significant in relation to their assets.[25] If, however, losses would be modest relative to a person's assets, he would be likely to display a roughly risk-neutral attitude toward them. Also, firms might usually be considered as risk-neutral actors in relation to many accidents.[26] Moreover, firms are sometimes treated as risk neutral if they are owned by well-diversified shareholders, for being well diversified, the shareholders should not be concerned about the risk borne by a particular firm.[27]

Here, assuming the operation of a commercial nuclear reactor as a typical example of a nuclear operator, the nuclear operator has an accounting basis (see Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors, Article 43-3-6). In Japan, nuclear operators, in fact, are listed companies. If so, it seems that nuclear operators are risk-neutral. However, the scale of nuclear accidents can be enormous and extensive, and depending on the scale of the nuclear accident, it is possible that nuclear operators are risk averse.

Therefore, we think there is no denying the room for nuclear operators to avoid risk.

(2) Are victims risk-averse?

Victims may be risk - averse. Certainly, some people seem risk-neutral, such as large-scale businesses operating in the vicinity of nuclear facilities (such as evacuation order areas). However, the vast majority of victims who should be premised on system design are the general population and relatively small businesses, as was the case with the JCO accident and the Fukushima Daiichi accident, and they are risk-averse. This should be considered on the assumption.

(3) If both injurers and victims are risk averse

What do you think if both injurers and victims are risk averse?

In this respect, when injurers are less risk averse than victims, and the relative appeal of the negligence rule will be enhanced when victims are less risk averse than injurers.[28]

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[25] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p 258

[26] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p 259

[27] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p 259, Note3)

[28] *Supra,* Shavell, *Foundations of Economic Analysis of Law*, (Harvard University Press, 2010), p 261

Here, regarding nuclear compensation, nuclear operators generally have more assets than victims, and the victims are more likely to avoid risks. For example, compared the case where an electric utility with net assets of 10 trillion yen is liable for damages of 10 trillion yen with the case where residents around a nuclear power plant are removed from their homes due to evacuation orders and the value of their residential land is lost, The residents around a nuclear power plan who are victims are more risk-averse.

Therefore, victims should be considered risk averse and negligence is relatively desirable.

4 Operation expenses for nuclear compensation

As with in the case of the accident law in general, on nuclear compensation, the superiority or inferiority of strict liability rule and negligence rule is not determined a priori from the viewpoint of operation costs. That is, the total number of claims for nuclear damages is greater in strict liability under negligence rule than in negligence rule. In contrast, operation costs are higher per claim.

However, the Act on Compensation for Nuclear Damage of Japan provides a mechanism to reduce operation costs. First, the Guidelines developed by the Dispute Review Board were established to quickly resolve a large number of disputes, and they actually performed that function. Second, the Dispute Review Board has mediated the settlement of disputes related to nuclear damages through so-called ADR procedures, reducing the number of disputes leading to lawsuits. Thus, operation costs have been generally reduced on the assumption that ADR procedures are lower than court proceedings.

5 Brief Summary

In short, on unilateral accidents in nuclear damages policy, there is little room for choosing the negligence rule as a judgment of legal policy. Therefore, strict liability is appropriate.

Section 4. From Rights to Human: Potential for Disaster Remedy Approach

I. Introduction

In 2018, the revised ACND was passed and enacted by the National Diet. Main points of the revisions are (i) establishment of the temporary payment system; (ii) the obligation of nuclear operators to formulate and publish their implementation policy of compensation; and (iii) addition of the causes for suspension of extinctive prescription.

Although the revised ACND have been just enacted, the nuclear compensation system would constantly continue to be changed. For this reason, we believe that it is meaningful to consider a basic approach to the ideal nuclear compensation system. As mentioned below, in addition to the compensation approach for covering the infringed rights through financial compensation for damage, in this research, we take an approach of giving remedy to victims who have suffered damage resulting from a nuclear accident, with an eye on “human.”

Based on the thought from the standpoint of utilizing the lessons learnt from the Fukushima Daiichi Nuclear Power Plant Accident, there is no objection that it is most important to analyze the mechanism of the accident and improve the safety of nuclear power generation not to cause an accident again. At the same time, the lessons of the accident may be utilized to consider what measures to be taken when an accident has occurred. One of them is the disaster remedy approach discussed below.

We will hereinafter analyze this approach from the standpoint of relieving any disasters caused by a nuclear accident, as well as from the framework of compensation for damage, and present our opinions as to a direction of legislation. We will first verify the characteristics of a nuclear accident (subsection II below), and discuss the two available approaches: disaster remedy approach and compensation approach (subsection III below). Finally, we consider concrete disaster remedy menus should a nuclear accident occur (subsection IV below).

II. Characteristics of a Nuclear Accident

An accident arising out of the nuclear business (nuclear accident), although not peculiar to it, has the following characteristics:

Firstly, a certain kind of business entails a certain risk (“residual risk”), even though avoidance measures are taken, and such risky business is allowed to be performed due to its social utility (so-called “torelable risk”). The nuclear business is its typical example. Therefore, the nuclear business contains a residual risk, and victims will one-sidedly bear the resulting risks (liability for risk and strict liability).

Secondly, in a nuclear accident, harm will occur instantly and in large numbers (instant and large-scale disaster). This characteristic can be compared with an explosion of a chemical plant or Minamata disease and any other public pollution incident. If the neighboring residents are injured in a chemical or other plant accident, no doubt, it is a large-scale disaster like a nuclear accident. However, as is clear from the Fukushima Daiichi Nuclear Power Plant Accident, the

magnitude of harm of a nuclear accident is larger than a chemical or other plant accident, although this is a comparison issue and there is no clear standard. In a public pollution or other incidents, there arose casualties even after a relatively long period of time. By contrast, in the case of a nuclear accident, evacuation and other harm will occur instantly.

For this reason, when the government adopts any policy, it will be required to set up a system that reflects such characteristics of the nuclear accident. The temporary payment system constitutes part of the legal system for nuclear power. Therefore, in building up the temporary payment/advance payment system, it is necessary to set up a system that fully takes each of the above-mentioned characteristics into account.

III. Two Approaches

1. Consequence from the Characteristics of Nuclear Accident

In light of such characteristics of the nuclear compensation, we understand that there are two aspects when a nuclear accident occurs and causes harm. The first aspect is to seek liability for damages from the nuclear operator that triggered the disaster, and the second aspect is to provide what victims require for remedy given the fact that a large-scale disaster has occurred.

Based on such assumption, any approach corresponding to each of those aspects will be required for policy making. Taking such an approach will make it possible to set up a more precise system that will further contribute to the remedy of victims. So, seeking the liability of a nuclear operator will be called the compensation approach, while coping with a large-scale disaster will be called the disaster remedy approach. In the subsections that follow, we would like to discuss in this order.

2. Compensation Approach

(1) Principle of Financial Compensation (denial of provision in real goods)

First of all, we consider the compensation approach. This is traditionally the approach for covering the infringed rights, if any, through payment of money called damages to relieve victims.

The purpose of the ACND is stipulated as follows: “The purpose of this act is to establish a basic system for compensation when a nuclear damage occurs due to operation of a reactor, thereby protecting victims and contributing to sound development of the nuclear business (Article 1 of the ACND) (emphasis added). What is notable is the phrase “establish a basic system for compensation,” which, in turn, ushers in the following two points.

Firstly, it may be said that a classical image of realizing the right through the court is an implicit assumption of “compensation.” In other words, as far as “compensation” is concerned, it will not need to be an emergent measure that will be required as the measures for disaster harm. It is rather suitable for ex post viewpoint of evaluating satisfaction of the requirements for establishment of a claim for compensation and covering damage even after most of the facts are made clear.

Secondly, damages under tort should be paid in cash (Article 722, paragraph (1) and Article 417 of Japanese Civil Code; called the “principle of financial compensation”). For this reason, compensation will only be allowed to be paid in money, not through provision in real goods.

(2) Potential for provision in real goods

Nevertheless, it is not impossible to realize remedy of victims through provision in real goods, even based on the assumption of the principle of financial compensation. More specifically, this may be achieved by concluding a substitute performance agreement (within the meaning of Article 482 of the Civil Code) for the obligation to compensate for damage to be performed by paying money and providing any necessary goods in lieu of payment of money.

However, this method is not realistic. It is because it is practically impossible for a nuclear operator to conclude an agreement for necessary provision in real goods with each of many victims that may arise once a nuclear accident occurs (the number of people who received the evacuation instruction in the Fukushima Nuclear Power Plant Accident is said to be in excess of 160,000).

3. Disaster Remedy Approach (Disaster Law)

(1) Disaster Remedy Act

There is the “Disaster Remedy Act” as the basic law for the disaster remedy approach. Once a nuclear accident happens, the Disaster Remedy Act will apply in addition to the [Basic Act on Nuclear Disaster Management] and other relevant laws (to be discussed in (3) below).

The purpose of the Disaster Remedy Act is stipulated as “The purpose of this Act is for the national government to provide necessary remedy on a first-aid basis with the cooperation of local municipalities (….), thereby ensuring protection of victims and preservation of social order” (Article 1) (emphasis added).

Based on this point, the first characteristic of the Disaster Remedy Act is that a variety of measures must be taken in an emergent manner. More specifically, the temporal proximity can be identified between the accident and taking the measures.

The second characteristic of the Disaster Remedy Act includes the following measures to be taken thereunder (Article 4 of the Disaster Remedy Act): (a) provision of evacuation centers and first-aid temporary housing; (b) provision of food through hot-meal and other services and supply of drinking water, supply or lending of clothing, furniture or other daily necessities; (c) medical and midwifery services; (d) supply or lending of money, appliances or materials necessary for jobs; and (e) provision of school supplies. Thus, most of the measures under the Disaster Remedy Act are provided in real goods, including provision of services, and it is evident that those are connected directly to life support.

Given the above-mentioned two points, it is understood that the purpose of disaster remedy approach is to relieve victims through first-aid provision of what victims are in need (goods and services) shortly after a disaster occurs.

(2) Addendum No. 1: Relationship with the Channeling

Nuclear operators will assume all liabilities for the nuclear accident, while no person other than the nuclear operator will assume any liability (Article 4, paragraph (1) of the ACND; “Channeling”). If this is the case, a question may arise as it being contrary to the provision of the above-mentioned paragraph that the national government, that is, “the person other than he nuclear operator” assumes the “liability” for disaster remedy.

However, this “liability” is literally clear to mean the liability under Article 3, paragraph (1) of the ACND, and the liability of the national government for disaster remedy is beyond the scope of the channeling. The system of channeling is intended to protect those who will provide the nuclear operators with goods and services, and provision of disaster remedy by the national government after the accident occurs has nothing to do with such intention of the system.

Considering positively from the standpoint of victims, victims should be relieved regardless of who is liable (pursuit of liability), and it is necessary to build up a system in light of this goal.

Therefore, it is not contrary to the system of channeling that the national government that is not the “person other than the nuclear operator” assumes the “liability” for disaster remedy.

(3) Addendum No. 2: Need for revisions of the acts

When a nuclear accident occurs, the Disaster Remedy Act will also apply, in addition to the Basic Act on Nuclear Disaster Management. For this reason, it is possible to argue that a nuclear accident can be addressed by the existing Disaster Remedy Act, and the disaster remedy approach is unnecessary.

Firstly, however, more specifically, it is consistently assumed that the Disaster Remedy Act will be applied to natural or other disaster, and it would be less reasonable to apply it to any disaster resulting from a nuclear accident. For example, in the case of natural disaster, no evacuation instruction in effect for several years will be assumed, unlike the Fukushima Daiichi Nuclear Power Plant Accident.

Secondly, there is an issue with fund raising as discussed below, and the revision of the relevant laws will make it possible to reflect the disaster remedy as part of the nuclear safety measures before an accident occurs.

Therefore, we believe that it is meaningful to stipulate special provisions on any disaster resulting from a nuclear accident, in addition to the existing Disaster Remedy Act.

IV. Concrete Disaster Remedy Menu

1. Try to Think by Putting Ourselves in the Place of Evacuees

When thinking of a disaster remedy menu is the measures under the existing Disaster Remedy Act mentioned above. However, in order to consider from what standpoint to think up a disaster remedy menu, it would be necessary from the

standpoint of capability[29] to consider what measures to be taken for those who will be put in the most difficult position as a result of evacuation instruction.
Who will be put in the most difficult position? More specifically, who will be at a loss because of the lack of cash at hand?

Considering these questions in light of the actual examples of the Great East Japan Earthquake and the Fukushima Daiichi Nuclear Power Plant Accident, as well as those of the welfare policies, elder citizens, people living alone, (jobless) pensioners, and people without deposit would typically be relevant. They would live in old houses, get vegetables and other food through self-sufficient or barter economy, and use little cash. As a matter of fact, it is heard that some evacuees use the evacuation compensation money of 100,000 yen per month as living expenses.

2. Potential Policy Measures

Provision in real goods

Considering when and what remedy measures will be necessary for those people, potential scenarios would include, without limitation, the measures described below.

Evacuees would evacuate in evacuation centers (such as gymnasiums) for a month shortly after the accident occurs, where they would require little money (lump-sum payments from municipalities, donations and hot-meal services would be available). Evacuation camps would start to be closed around the second month after the accident, and they would need to move to temporary housing or rental apartments or flats in the private market. The problem is when they move to the housing in the private market, not rent-free temporary housing.

One idea would be to develop a hired temporary housing system[30] at an early stage. For evacuees who cannot benefit from that system or have moved to any house that is not a hired temporary housing, the national government would announce that lessors should wait for payment of rents until it definitely starts to reimburse housing expenses in six months. This would make it possible to realize so-called financing by lessors.

(2) Provision in real goods/provision of medical care

It would be beneficial to take measures so that those who are sick or injured may receive medical care preferentially than to provide them with cash. Necessities of evacuees would be provided in real goods.

3. Relationship with the Temporary Payment System

(1) Temporary payment system and disaster remedy approach

In this subsection, we address the relationship with the temporary payment system established in the 2018 revision of the ACND (for the relationship with the temporary payment, also refer to Section 5 below).

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[29] Refer to Sen, Amartya, *The Idea of Justice*, Penguin, 2010.

[30] A victim rent a house; the fee of such a rent is paid by the government.

As indicated in the “Interim Summary” by the amendment panel of the Japan Atomic Energy Commission, emergent measures must be taken, as it is expected that victims will be economically squeezed in their immediate living as a result of sudden evacuation after the nuclear accident. Based on the awareness of the issues addressed in this report, a nuclear accident is a large-scale disaster and its harm will arise instantly. Given these characteristics of the nuclear accident, it is necessary to take urgent disaster remedy measures to support the lives of victims, and payment of damages may be deterred for the time being.

In other words, it is easily imagined that victims who have evacuated to temporary evaluation centers (such as gymnasiums) with only the clothes they were wearing basically have no money to continue their life for the time being, e.g., to pay transportation charges for evacuation and purchase daily necessities and consumer electric appliances for temporary housing. Such situation would worsen the health conditions of victims and, in the worst case, would make it difficult for them to support their lives. For such victims, it is obviously important to maintain their living in the immediate future than to receive compensation in six months.

Depending on the situation of the accident, victims would lack even daily necessities, among other things, food in the evacuation sites. If this is the case, it is evident that provision of food is more useful than money. Furthermore, depending on the situation of the accident, victims may be wounded. In that case, instant provision of medical case is more useful than payment of compensation on the grounds of life or body infringement. More specifically, given the characteristics of the nuclear accident (i.e., a large-scale disaster occurs instantly), the disaster remedy approach should be emphasized shortly after the accident. Subsequently, it would be desirable to transfer to any measures with a focus on the compensation approach after the turmoil in the wake of the accident calms down.

Details of the measures to be taken should be examined from the viewpoint of “remedy required by victims,” and should not be bound to provision of money. To this end, menus for provision in real goods and provision of money as necessary for victims who are in the most difficult situation should be set up.

In this context, payment of money (temporary payment) would be posed as one of disaster remedy menus.

(2) Relationship with the Compensation Approach

As discussed above, considering the compensation approach and the disaster remedy approach separately, we understand that the temporary/advance payment system is an intersection of those two approaches. If we only look into the phenomena as the emergent measures, the act of providing money to victims (affected people) has both the aspects of advance payment of compensation and disaster remedy.

Thus, the relationship of both is not mutually exclusive. It is, however, necessary to identify on which a focus should be placed, on the grounds of the above-mentioned characteristics of “remedy required by victims” and “large-scale

disaster.” In other words, this is a problem of which should be emphasized in building up a system: to make temporary payments as advance payments of compensation in response to the pursuit of liability or to build a system solely to relieve victims, setting aside the pursuit of liability.

In fact, the national government that has experienced the large-scale disaster of the Fukushima Daiichi Nuclear Power Plant Accident is sought to collect various events suffered by victims (affected people) after the accident and seriously consider what it can do for victims (affected people) and how it will relieve them.

Section 5. “Temporary Payment” System as an Accident Remedy

I. Introduction

The revised ACND of 2018 newly establishes Chapter 4-2 and its Section 2 stipulates “lending of money for payment of temporary amount of the specified nuclear compensation.” Article 17-3 stipulates that “When a nuclear operator intends to pay (….) of temporary amount of the specified nuclear compensation to victims who have suffered the specified nuclear damage (….) in accordance with the standards prescribed by the Cabinet Order, that nuclear operator may apply that the government will lend funds necessary for payment of the temporary amount of such specified nuclear compensation, to the extent of the amount specified in the Cabinet Order not exceeding the amount of financial security.”

In the subsections that follow, we verify the outline of the system, including the progress leading to the revisions for the temporary/advance payment (II) and then consider in what scenes the temporary/advance payments are necessary (III). In addition, we consider the temporary/advance payments from the disaster remedy approach (IV).

II. Progress Leading to the Creation of the Temporary Payment System

1. Historical Discussions at the Advisory Committee on Nuclear Compensation System under the Japan Atomic Energy Commission

With respect to the temporary/advance payments, the Advisory Committee on Nuclear Compensation System under the Japan Atomic Energy Commission says “(2) Advance payment by the national government: Based on the experiences of the TEPCO Fukushima Nuclear Power Plant Accident, it is of significance to stipulate in a general law a mechanism in which the national government will make advance payment in place of a nuclear operator as an emergent measure if the nuclear operator cannot unavoidably make prompt payment of compensation or temporary amount, thereby securing prompt remedy of victims.”

2. Outline of the “Temporary Payment Act”

In considering the revised ACND mentioned above, we review the outline of the so-called “Temporary Payment Act”[31] that underlaid the revisions. The Temporary Payment Act limits the targets of temporary payment to “specified nuclear damage” (Article 3, paragraph (1)), and provides that the amount of temporary payment shall be the amount obtained by multiplying a roughly estimated amount calculated using (….) by a percentage of (….) of not more than five/tenths (5/10) (Article 4, paragraph (1)). It also provides that any person who intends to receive temporary payment must make a request to the competent minister (Article 5, paragraph (1)), and further that the competent minister may contract with an entity specified by the Cabinet Order as (….) for parts of the administrative process for temporary payment (Article 8, paragraph (3), under

[31] Official title is the “Act on Emergency Measures Related to Damage Caused by the 2011 Nuclear Accident” (Act No. 91 of 2011). Hereinafter called the “Temporary Payment Act.”

which the government contracted with the Nuclear Compensation Facilitation Corporation for the administrative process for temporary payment).

III. Scenarios in Which the Temporary Payment System Is Necessary

1. Definitions

The meanings of the terms temporary/advance payments differ depending on writers and contexts. So, we verify the definitions of “advance payment” and “temporary payment” to clarify the discussion points.

(1) “Advance payment”

The term “advance payment” cannot be found in any law dictionary. That is, it is something like a jargon in use among law professionals, not a legal term. Based on the provisions of the “Temporary Payment Act” and discussions of the expert panels, it can be defined as the act of a third party repaying or performing an obligation. This is nothing else but “repayment by a third party” in legally technical term under Article 474 of the Civil Code.[32]

The opposite term of the advance payment defined as such is a payment by a principal (which is also a jargon), and it is understood that those terms are defined by who will pay an obligation.

(2) “Temporary payment”

The term “temporary payment” cannot be found in any law dictionary and is a jargon, not a legal term.

Here, we discuss by referring to the Act on Securing Compensation for Automobile Accidents that has a similar mechanism. Article 17 of the act stipulates that “(1) If the death or bodily injury of another person results from a person in possession's operation of an automobile (….), the injured party, (….), may file a claim with the insurer for it to pay the injured party the amount that Cabinet Order prescribes as a provisional payout (….)” and further that “(3) If the amount of a provisional payout as referred to in paragraph (1) exceeds the damages to be paid, an insurer may demand the return of the part in excess.”

Based on this, we understand that temporary payment/provisional payout means payment of an obligation in a roughly estimated amount and make settlement later when the existence or amount of an obligation cannot be determined when payment of any amount is made. The earmark (merkmal) is whether the act of subsequent settlement (recalculation) will be done “without fail” as planned. If we are permitted to forcibly express it using legal terms, it would be repayment with the termination conditions or repayment with settlement agreement.

What is more important is that it is an issue of timing in that payment must be made before it becomes due and payable in relation to the need to determine the

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[32] Article 474 of the Civil Code stipulates that “*[T]he performance of an obligation may be effected by a third party; provided, however, that, this shall not apply in cases where the nature of such obligation does not permit such performance or the parties have manifested their intention to the contrary*.”

existence and/or extent of an obligation. The opposite term of “temporary payment” is confirmed payment (which is also a jargon).

(3) Discussion process

In this regard, in the document of Japanese Atomic Energy Commission, the Advisory Committee intends to discuss temporary payment and advance payment without especially defining those terms. However, as discussed above, it is confirmed that advance payment and temporary payment are different in nature, and it is necessary to discuss by distinguishing between those terms. For this reason, starting with confirmed payment and payment by a principal as a process of discussion, we will identify the scenes that will require advance/temporary payment and search for an ideal design of the system in sequence.

We understand that the starting point of “confirmed payment and payment by a principal” refers to the relevant compensation by TEPCO after the Fukushima accident. More specifically, the subject of the relevant obligation is the nuclear operator that caused the accident and the timing of payment will come after the obligation becomes final and confirmed in a settlement agreement or a final and legally binding court judgment.

2. Confirmed Payment and Advance Payment

(1) Points of Issue

a. First of all, we discuss confirmed payment and advance payment, that is, the act of any entity other than the primary subject of the obligation repaying the obligation as non-temporary and confirmed payment.

b. Assumptions of Discussion (Typical Answers)

Why is such advance payment necessary? The first typical possible answer is (i) the request of a primary obligor that any third party make (confirmed) payment of compensation by reason that it is not yet ready to make such (confirmed) payment. In fact, TEPCO has paid compensations by mobilizing over 10,000 people after the Fukushima accident. Considering the need for the preparedness of a similar payment system, it would be difficult for a nuclear operator to develop the compensation payment system shortly after the occurrence of a nuclear accident.

This request is based on the assumption that a third party can develop a payment system more quickly than the nuclear operator as the primary obligor. However, should the subject of advance payment be the government, it could not develop a payment system more quickly than the nuclear operator. Therefore, this request cannot logically and necessarily lay the basis for an advance payment system.

The second possible answer is (ii) the request of a nuclear operator for payment by a third party, as a nuclear operator, even though it secures funds for payment of compensation (i.e., cash), may not pay such cash to victims. This fear is nothing else but the concern of the nuclear operator for bankruptcy.

The third possible answer is (iii) the request of a nuclear operator for payment by a third party, as the nuclear operator has no cash for compensation although it may finance it someday. This is a representation that it cannot make payment, which means that it is going into bankruptcy.

(2) Discussion: Necessity for an Entity Other than the Nuclear Operator (i.e., a Third Party) to pay

a. The first case is that the nuclear operator is likely to become insolvent for the purpose of the balance sheet, although it has cash. In this case, even if the nuclear operator pays compensation to victims, such payment will be denied by the trustees and cease to be effective under the bankruptcy law and corporate reorganization law (e.g., Article 160 et seq. of the Bankruptcy Act). Therefore, a third party will be required to make payment on behalf of the nuclear operator as the primary obligor.

Such case appears to have been addressed by the Nuclear Compensation and Decommissioning Facilitation Corporation system. More specifically, some assert that even if the nuclear operator becomes insolvent due to the nuclear accident, it can evade insolvency with the support of the Nuclear Compensation and Decommissioning Facilitation Corporation.

However, we cannot support this for the following three reasons. (i) It is necessary to pay attention that the facilitation corporation system will only finance the obligation to compensate for nuclear damage. This typically means that it is still necessary to address the failure to raise funds by corporate debentures. In the recent Fukushima accident, in July 2012, TEPCO decided to accept capital injection by reason of other debts, although its obligation to compensate for nuclear damage was funded. (ii) The fact that the business environment of the power utility differed from that of 2011 must not be forgotten. That is, the nuclear operators that are the power utilities may go into bankruptcy as a result of the electricity deregulation, regardless of the accident. In other words, the nuclear operators other than the power utilities have the bankruptcy risk with no relation to power utilities. (iii) Furthermore, support of the Nuclear Compensation and Decommissioning Facilitation Corporation is available mainly to power utilities, and nuclear operators that are not the power utilities will not receive such support. For example, when an accident similar to the Tokaimura nuclear power Plant accident occurs, no support of the Nuclear Compensation and Decommissioning Facilitation Corporation will be legally invoked.

b. How about the assertion of a nuclear operation that it cannot make payment as the scope of compensation is to be determined, although it has cash?

However, firstly, if the nuclear operator cannot identify the scope of compensation, a third party will also be unable to identify and have no grounds for advance payment.

Secondly, as a matter of fact, looking into the Fukushima accident chronologically, the government formulated the interim guidelines in August 2011 (determination of the scope of compensation), and Tokyo Electric Power Co., Inc.

(“TEPCO”) dispatched the invoices in September, and the government started to make payments (of the compensations) in October. Given this, it seems to be difficult to pay compensations as confirmed payments before the scope of compensation is determined. However, when a next nuclear accident occurs, the government now can make payment based on the Interim Guidelines, unlike the Fukushima accident without such Interim Guidelines. The government can also add the scope of compensation by revising the ACND.

c. Thirdly, it is assumed that any nuclear operator is unable to make payment as it may be excepted from the liability due to a force majeure event, although it has cash. For example, if a nuclear accident occurs due to war, the nuclear operator will be exempted from its liability (Article 3, paragraph (1), proviso of the ACND), in which case a third party will be required to make payment. If this is the case, a request for advance payment will not be denied.

Thus, we understand that considering in what cases it becomes necessary to make advance payment, it is not meaningful if we only consider a closed issue of advance payment.

(3) Consideration: Who is a third party?

a. Establishment of Issue

As mentioned above, in the first analysis, we considered the need of an entity other than the nuclear operator to make payment. The next issue is who may be an “entity other than the nuclear operator.”

In this regard, any entity other than the government (state) cannot be such entity (including the case in which the government will contract with the facilitation corporation or other organization for such payment). If so, the issue here will result in a two-choice question of “which will assume the obligation to compensate for nuclear damage, the nuclear operator or the government.” More specifically, the following flow of thinking is available: (i) to be separated by whether the nuclear operator falls within the exemption from liability due to a force majeure event; (ii) if exempted, to ask whether or not the government will make payment; (iii) if not exempted, to be separated by whether or not the nuclear operator went into bankruptcy; (iv) if the nuclear operator is bankrupt, to ask whether or not the government will make payment; and (v) if the nuclear operator is not bankrupt, the nuclear operator will make payment.

b. New Problems

Here, new problems arise.

As discussed above, if the nuclear operator is unable to make payment because it may be exempted from the liability due to a force majeure event, although it has cash (e.g., when a nuclear accident occurs due to terrorism), the nuclear operator will be exempted from liability, and will no longer be the primary subject of obligation, in which case there will be no advance payment issue.

Although discussions start with the need for advance payment, it is no longer about advance payment. In other words, it is about an ultimate question on who will be ultimately liable.

This is nothing else than a policy issue about how the government support under Article 17 of the ACND should be.

In this regard, if the nuclear operator is exempted from liability due to any force majeure event, only the government will be held ultimately liable based on the above-mentioned two-choice question.

Next, if the nuclear operator goes into bankruptcy, that nuclear operator will ultimately be exempted from liability and cease to exist as a judicial entity. Even if victims file their proofs of claims to be indemnified, the repayment rate is estimated to be nil or near nil. In either case, there will remain a problem of who will pay the rest. And, only the government will pay the rest based on the above-mentioned two-choice question.

(4) Conclusion of This Subsection

We understand, based on the above-mentioned consideration, that advance payment (more precisely, that a third party will be ultimately liable to pay compensations) will be truly required when the nuclear operator is bankrupt and is exempted from liability due to any force majeure event.

3. Temporary Payment and Payment by a Principal

(1) Establishment of Issues, and Assumptions for That

a. Issues

Then, we consider temporary payment and confirmed payment. For this purpose, the need for temporary payment is, in other words, why it is necessary to make payment shortly after the occurrence of an accident, or why confirmed payment cannot be made. This is a search for reasons why TEPCO had to make temporary payments in May 2011.

b. Assumptions

There are two assumptions to consider this issue.

The first is that (i) the nuclear operator is unlikely to go into bankruptcy. It is because the nuclear operator cannot make payment if it is bankrupt. The second is that (ii) the nuclear operator has sufficient cash for compensation. In fact, TEPCO, which received emergency loans shortly after the Fukushima accident, had sufficient cash and made temporary payments with such cash.

(2) Discussion

a. Applicability for Exemption from Liability due to Any Force Majeure Event

As a matter of fact, there was the possibility of TEPCO not having been held liable for compensation, if the accident was found to have been caused by “any catastrophic natural disaster” referred to in the proviso of paragraph (1) of Article 3 of the ACND. The first potential answer is, however, that TEPCO would only

make temporary payments to a certain extent from the standpoint of social pressure and remedy of victims and make settlements later when it turns out whether or not it is held liable. This situation would be such that a nuclear operator wishes to refrain from making temporary payments, if possible. This is because making temporary payments means, as the case may be, that it denies the assertion of the exemption from liability due to any force majeure event and admits that it is liable.

b. Determination of the scope of compensation

The second potential answer is that TEPCO would make temporary payments for reason that payees, that is, the scope of compensation recipients was vague, and make confirmed payment after the scope of compensation was determined. This reason was justified in the Fukushima accident. After the Fukushima accident, however, it has become possible to make payments in conformance with the interim or other guidelines as confirmed payments, and this would not justify temporary payment.

c. Improvement of the payment examination system

The third potential answer is to make temporary payments due to the inadequacy of the payment examination system. In fact, it will take a considerable amount of time to improve the payment examination system, and it could serve as the reasons for temporary payment by the nuclear operator to make temporary payments and then make settlements.

(3) Conclusion of this subsection

Given the above, it is concluded that temporary payment and payment by a principal will be required, firstly, as a provisional measure until whether it is exempted from liability due to any force majeure event is determined and, then, when the examination system is not ready.

4. Advance Payment and Temporary Payment

(1) Order of consideration

After going through the above consideration, it is now possible to consider advance payment and temporary payment.

(2) When advance payment as temporary payment is requested

a. What was made clear through the above-mentioned consideration

From the consideration in II above that advance payment (more precisely, final payment of compensation by the government) is requested in relation to: a) exemption from liability due to any force majeure event and b) bankruptcy. Of these, in what case will the government have to make temporary payments?

b. In relation to the exemption from liability due to any force majeure event

The problem here is that nobody knows whether or not the nuclear operator is exempted from liability due to any force majeure event. For example, if a nuclear

accident occurs due to terrorism, there is the problem of whether or not terrorism is “social disturbance,” the answer of which is not clear. If a nuclear accident occurs due to earthquakes and tsunami that are larger than those in the Fukushima accident, is it a catastrophic natural disaster? The answer is not clear. It is fresh in our mind that fierce and clamorous arguments were made about the question of whether the Fukushima accident was the result of a “catastrophic natural disaster” shortly after the occurrence of that accident. This question further contains many issues as described below.

(i) Who will determine whether the nuclear operator is exempted from liability due to any force majeure event?

Only the court will determine it.

(ii) How long will it take to determine whether the nuclear operator is exempted from liability due to any force majeure event? Can it be determined while awaiting victims can be justified?

It is estimated that it will take a year or so at the earliest if the lawsuit continues in the Supreme Court. It could never be justified that victims who have evacuated with only the clothes they were wearing would live for a year without compensation.

(iii) Who will bring a lawsuit?

A lawsuit, needless to say, will not be initiated automatically. Somebody needs to bring a lawsuit. Discussing in addition to traffic accident or other cases, victims would bring lawsuits against the nuclear operator. However, this will take further several months before they are ready to bring lawsuits. In fact, even in the Fukushima accident, no litigation was brought against TEPCO shortly after the accident.

(iv) There is a problem to whom the personal scope of the effect of a judgment will be extended.

To this point, the effect of a court judgment will be extended only to the litigants involved, not to any entities other than the litigants involved, under the Code of Civil Procedure (Article 115). If this is the case, even if a judgement becomes final and legally binding in any lawsuit that the nuclear operator is not exempted from liability due to any force majeure event, the nuclear operator will be unable to demand that the complaint be dismissed by invoking such final and legally binding judgment, when another lawsuit is brought.

For this reason, it would be necessary to develop so-called legally binding effect to third parties (i.e., a legal concept to extend the effect of judgment to those other than the litigants involved; there are actual examples in the personnel affairs or other litigations).

(v) There is a problem of based on what evidences judgment will be made, in other words, how a judgment will be made while the factual background is not made clear.

For example, in the Fukushima accident, it took two or three years before the reports of various accident investigation committees were published. Details of the Fukushima accident remain unclear even in those reports. In this regard, the traditional approach under the Code of Civil Procedure is to reach a resolution based on the burden of proof. More specifically, if the existence of the fact cannot be confirmed even based on all evidences presented to the court, it will be judged at the cost of the party who has the duty of proof. And, the nuclear operator has the duty of proof under the proviso of paragraph (1) of Article 3 of the ACND. Therefore, the nuclear operator would have no chance of winning the case as a matter of fact.

c. Cases in Relation to the Bankruptcy

Whether or not a nuclear operator will go into bankruptcy cannot be determined just when the nuclear accident occurs. In fact, it will be determined by the debenture and other fund-raising market trend and the governmental movements.

Therefore, whether or not it will go into bankruptcy (i.e., whether or not a decision of commencement of corporate reorganization proceeding will be issued (in the case of a corporate reorganization proceeding) will be uncertain for a reasonable period of time after the occurrence of the accident, and whether or not it will be denied will often depend on what subsequent steps will be taken. Given these situations, a request for temporary payment as emergent measures will be made.

d. Therefore, it will be justified to make a request for temporary payment, in addition to advance payment as provisional and emergent measures, until it is determined whether the nuclear operator will go into bankruptcy or it is exempted from liability due to any force majeure event.

(3) Conclusion of this subsection

In short, a request for temporary/advance payment will be made as provisional and emergent measures until the bankruptcy or exemption from liability due to any force majeure event is determined. This reflects an ideal nuclear compensation method of allocating risks between the government and the private sector as presented by Mr. Akihiro Sawa, and matches the concept of nuclear compensation as comprehensive remedial measures from nuclear disaster.

IV. Future Direction of Legislation: Consideration from the Disaster Remedy Approach

As discussed in Section 4 above, under the disaster remedy approach, the temporary payment system can be positioned as one of the disaster remedy menus. As a result, for example, the scope of remedy targets can be considered as follows.

In this regard, it is natural under the compensation approach to cover damages resulting from the expenditures of evacuation-related living costs, as well as operational damages and damages resulting from job loss and unemployment. By contrast, the coverage of the nuclear disaster would not be logically and essentially determined as with the coverage of disaster remedy. In our opinion, economic damages will not be quickly addressed unlike those necessary for life and living support. It is an established fact that human and physical resources available for allocation for disaster remedy are restricted.

Therefore, economic losses would have to be inferior to measures necessary for life and living support from the disaster remedy approach (life and living can be supported by remedy, even if economic income is deprived).

For the sake of clarity, it is natural for those who have suffered business or other economic losses to be eligible to seek the liability of the nuclear operator for compensation for damage. What we mention here is that under the disaster remedy approach, we, as natural persons, should put our efforts to the life and living support of victims.

Chapter 3. Future Perspective

I. Implications Identified

This research purposes for application of risks brought by science and technology to legal analysis by legally analyzing the risks involving the nuclear business. As a result, we reached the following implications.

The first implication involves the relationship of energy and environmental policies with laws. Energy and environmental policies would have been established relatively without reference to the legal practice to date. For example, it suffices that where crude oil storage bases should be placed or how much oil should be stored will be determined from the standpoint of technology and policies, without reference to laws, and no legal analysis is basically necessary. However, based on the results of consideration in this research, such relationships are changing. To discuss energy policies, and science and technological policies, we need to respect self-decision or autonomy, and cannot ignore how those policies relate to an increasingly fragmented society. As a result, it seems to become difficult to ignore how those policies relate to the laws that govern society. In other words, it is necessary to add legal analysis to discussions about the policies, reflecting the diversifications of the values of society and changes of society. For example, the trends of the nuclear power plant shutdowns and the court judgments of those shutdowns cannot be ignored in the nuclear safety policy making process. It is difficult to consider accident risks resulting from earthquakes and tsunami disasters separately and independently from legal analysis of who will be held liable for compensation for damage. Backfit and other nuclear safety regulatory requirements are, of course, subject to compliance with the norm of the administrative law, and it is not enough only if safety standards are formulated. The importance of the relationship between those regulatory requirements and the general theories of the administrative law is increasing. This is true especially with energy policies, compared with the environmental policies based on the legal sphere of the environment law.

Another implication involves the methodologies and approaches of legal analysis. This means that there are certain limits as long as the methodologies of legal analysis for the energy and environmental policies adhere to traditional legal interpretations. It is certainly important to interpret the provisions of laws, as one of the purposes of legal analysis is generally to persuade the court. However, it seems to be more and more important to take legal and sociological approaches based on knowledge of other academic disciplines when we think about the energy and environmental policies. Thus, legal analysis of the energy and environmental policies will necessarily become interdisciplinary. In Chapter 2, Sections 2 and 3 of this report, we analyzed whether or not an upper limit should be established on nuclear accident-related liability using the knowledge of economics. In order to develop the results of analysis from “rights” to “human” presented in Chapter 2, Sections 4 and 5 toward the future, it is essential to use knowledge of other academic disciplines. Looking at this from the perspective of law, and realistically accepting further development of science, it is desirable to take approaches to utilize those sets of knowledge for legal analysis by

proactively trusting those sets of knowledge of other academic disciplines, even though it is difficult to fully understand them.

In other words, it is necessary to take in legal analysis for policy making in response to changes in society on the one hand, and it is necessary to take in sets of knowledge of other academic disciplines in legal analysis on the other hand.

II. Future Direction and Research Themes

As a direction of our future research activity, it is desirable that the necessity for utilization of knowledge of law for policy making is recognized, and further that legal analysis will be made by taking interdisciplinary and naturalistic approaches. Potential research themes are as described below.

(1) Decarbonization of the Energy and Legal Policies

As emissions of carbon dioxide are inevitable for human beings to live, it is urgently necessary to utilize decarbonized energy as global warming and climate change advance. We would like to analyze who should assume liabilities for risks involving neighboring residents and legal liabilities in using and developing renewable energy and nuclear power generation, using sets of knowledge of social science (including economics) and natural science. To be sure, it may be insignificant to analyze risks involving the so-called 20th century-type heavy industry, as higher focus tends to be placed on modern science and technology risks such as artificial intelligence (AI). However, such risks are still fundamental to humans in that lives and bodies of neighboring residents may be infringed, and the issue of even extremely small life risks being largely identified through human cognitive function (risk recognition) is extremely contemporary in nature. Thus, we would like to analyze energy policies, especially the policies on the use of decarbonized energy from a legal perspective.

We also would like to consider ideal forms of risks and liabilities as parts of legal policies from the standpoint of business investment induction. For example, setting an upper limit on liability for nuclear accident (limitation on liability) cannot be said to be the best choice from the viewpoint of accident risk reduction (Chapter 2, Section 2 of this report), and negligence rule is not desirable in light of the nature of the liability for nuclear compensation risk. If this is the case, any investment induction system would be required to run nuclear power generation as a private-sector business.

(2) Risk Governance

We would like to analyze science and technology risks, in particular, risks involving lives and bodies, by using sets of knowledge of natural science and social science. As described above, it can be thought that the risks in a broad sense, including subjective risks (risk recognition), will just become more and more important in the modern society that is characterized by diversified values. So-called risk governance is said to have an extremely interdisciplinary nature, including engineering, social science, ethics and law. In other words, we wish to

make contributions to such risk governance from the area of law through positive exchange with experts in the engineering and other academic disciplines.

In this connection, it is best to familiar with more than one academic discipline for interdisciplinary approaches. It is, however, impossible to realistically expect, given further development of science, that we will be familiar with more than one academic discipline in the natural science and law that are closely related to risk governance. For example, the abilities of fully analyzing earth science, such as seismic prediction, as well as law have never been required. Natural science is, in nature, an attempt to approach any scientific truth through error corrections and will always accompany any large or small paradigm shift. Given this, we believe that it is constructive to think to what we can contribute from the perspective of law provisionally based on the assumption of the arrival points of natural science. Conversely, it is not reasonable to expect experts in the engineering and other national science areas to be familiar with law, and we believe that we are instead requested to offer opinions from the law aspect.

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