

Nuclear Damage Compensation in Japan: Multiple Nuclear Meltdowns and a Myth of Absolute Safety^(*)

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Abstract

Tort law's compensation objective can justify: (i) the governmental support to bail out TEPCO under the Act to Establish Nuclear Damage Compensation Facilitation Corporation of 2011; and (ii) the governmental interpretation to disqualify the 3/11 tsunami from liability-exempting-grave-natural disasters under the old Act on Compensation for Nuclear Damage of 1961. However, the government should educate the public about nuclear operation's safety limitation to neutralize over-deterrence created by the above (ii) interpretation.

Key Words

(1) the Act on Compensation for Nuclear Damage (Act No. 147 of 1961 as amended); (2) the Act to Establish Nuclear Damage Compensation Facilitation Corporation (Act No. 94 of 2011); (3) hindsight bias; (4) probability neglect; (5) absolute safety; and (6) a grave natural disaster of an exceptional character.

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INTRODUCTION

A large amount of radioactive leakage from Fukushima Daiichi Nuclear Power Station (“Fukushima Daiichi” or “NPS”) operated by

Tokyo Electric Power Company (“TEPCO”) was said to be caused mainly by a huge tsunami occurred on March 11, 2011.¹⁾

TEPCO had assumed that a tsunami could reach at maximum 5.4m in height, against which TEPCO had taken countermeasures. But the 3/11 tsunami, reaching 14-15m (46ft) in height²⁾ “beyond the scope of assumption” taken by TEPCO, overwhelmed the countermeasures. Its floodwater submerged cooling systems of NPS, caused total blackouts, and led to multiple hydrogen explosions, multiple reactors meltdowns, and a large amount of radioactive leakage. The radioactive leakage inflicted huge amounts of losses on residents and business especially around NPS.

Since then, the phrase, “beyond the scope of assumption (*soutei-gai* or 想定外),” has become unpopular among a populace in Japan because TEPCO or those who have been involved in promotion of nuclear power business (who are called “nuclear power village [people]”) repeatedly said that the 3/11 tsunami was “beyond the scope of

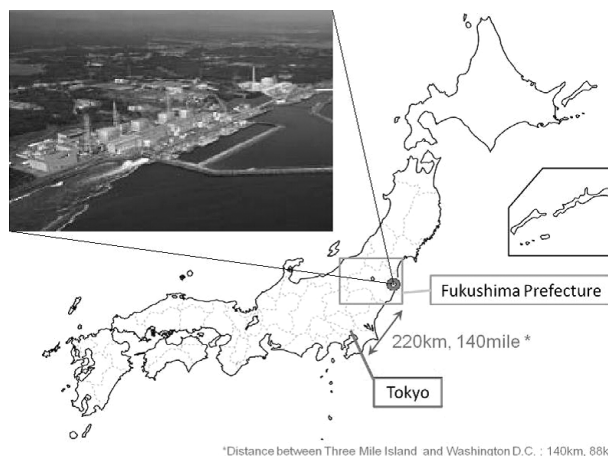


Figure 1: Fukushima Daiichi's Location

Source: Ministry of Economy, Trade and Industry, Location of Fukushima Daiichi in Japan, Great East Japan Earthquake and the seismic damage to the NPS, as of 15:30 June 25th, 2011 (JST), available at http://www.meti.go.jp/english/earthquake/nuclear/pdf/110625_1530_factsheet.pdf (last visited on July 2, 2011).

sages to the public as follows: (i) an occurrence of a tsunami with a huge scale equivalent to the 3/11 one at or around Fukushima Daiichi was foreseeable; (ii) the incident could, and should, have been prevented; and (iii) TEPCO was culpable for failing to take precautions against the multiple meltdowns and huge radioactive leakage resulted from the huge tsunami's floodwater. These messages automatically have made the public have a feeling that TEPCO should *not* be supported by tax payers' money even if it would become insolvent due to its unlimited (and tens of billions of dollars of) liability.¹⁰⁾

On the contrary to the public perception about the governmental interpretation, the government thereafter published its policy to support financially TEPCO¹¹⁾ so that it could survive as a going concern even though its debts for damages for the victims could reach a skyrocketed amount. To implement the policy to allow TEPCO to survive, the government prepared a bill whose title was "the Act to Establish Nuclear Damage Compensation Facilitation Corporation" (Act No. 94 of 2011) ("Compensation Facilitation Corporation Act" or "the Act") and had it passed in the National Diet on August 3, 2011. Because this Act and the governmental policy behind the Act have looked inconsistent with the public perception created by the governmental interpretation labeling TEPCO as a wrongdoer, the Act and policy behind it have not seemed to be fully acceptable to the public and mass media.¹²⁾

The above governmental behavior faces some difficulty in the context of torts, too. On the one hand, assuming that the 3/11 tsunami should qualify as "a grave natural disaster of an exceptional character" as argued by some commentators including multiple leading law scholars¹³⁾ and

that the resulting large radioactive leakage was (arguably) beyond TEPCO's control, it seems to be against fairness¹⁴⁾ to impose on TEPCO liability for harms caused by the exceptionally huge tsunami which was "beyond the scope of assumption." On the other hand, however, assuming that TEPCO was culpable for failure to avoid the incident as argued by the other commentators¹⁵⁾ and the government,¹⁶⁾ it seems to be against corrective justice, on which tort law is partly based, to have allowed the wrongdoer not to pay for damages out of its own assets. In addition to that, the governmental policy to support TEPCO, who is strictly liable under the governmental interpretation, apparently seems: (i) to mean undesirable externalization of social costs produced by TEPCO's abnormally dangerous activity; and (ii) to lead to under-deterrence as well as moral hazard. Consequently, the governmental behavior looks inconsistent and is difficult to be explained to the public and from the tort law's objectives (*i.e.*, fairness and deterrence).

The governmental behavior can, however, be explained from a *political* viewpoint which puts top priorities on (i) compensating victims and (ii) avoiding further disasters, as explained in the body of this piece. Part I will explain why the apparently inconsistent policy can be explained from a compensation perspective. And Part II will explain additional reasons which justify the governmental policy to allow TEMCO to survive. Part III will add another ground based on which the government has decided to use tax payers' money to support financially TEPCO. And finally Part IV will criticize bad side effects to be caused by the governmental interpretation including its Investigation Committee's Interim Report.

I. COMPENSATION FIRST

The current governmental policy seems to put its highest priority on quick and adequate compensation of victims of the Fukushima Dai-ichi incident.¹⁷⁾ This priority can explain why the government took an apparently inconsistent attitude where it has not exempted TEPCO from liability and thereafter it has financially supported the wrongdoer, TEPCO.

A. The Core Reason for Not Exempting TEPCO from Liability Regardless of an Apparent “Grave Natural Disaster of an Exceptional Character”

1. Problems Inherent in the Nuclear Damage Compensation Act

When the Fukushima Daiichi incident happened, the only statute which was practically available for the government to implement immediately compensation of victims was the Nuclear

Damage Compensation Act. But the Act was not a well-drafted statute, from a victim-compensation viewpoint, mainly because it was different from recommendations (“WAGATSUMA Recommendations”)¹⁸⁾ in which the statute originated.

(a) WAGATSUMA Recommendations prior to the Legislation of the Act

WAGATSUMA Recommendations, which became the basis of the enactment of the Act, were submitted to the Chair of Japan Atomic Energy Commission, Mr. Yasuhiro NAKASONE (who has belonged to the conservative Liberal Democratic Party, LDP, and who later became the Prime Minister of Japan when Mr. Ronald Reagan was the President of the U.S.). WAGATSUMA Recommendations were prepared by a blue ribbon committee whose chair was the authoritative civil law scholar, Dr. Sakae WAGATSUMA. WAGATSUMA Recommendations were drafted based on a principle that the government should finally compensate victims so that no victims would be left un-



Figure 4: WAGATSUMA Recommendations Explained in JURISUTO
 “JURISUTO,” a leading commercial law journal in Japan, issued in 1961, which featured a legal system for nuclear damage compensation when the Act was legislated. Cornell Law Library’s collection.

compensated in case losses are not covered by a nuclear operator's insurance.¹⁹⁾ And this principle seems to have been based on a sort of social welfare and distributive justice. That intention was typically reflected by a statement made by Dr. WAGATSUMA in a leading law review article as follows: "Nobody would oppose an idea that a whole of the nation should finally bear losses, rather than leaving them on the shoulders of unlucky victims who happen to be around a nuclear power station, as far as the government would dare to promote unprecedented nuclear business as national policy."²⁰⁾

And WAGATSUMA Recommendations urged to collect contributions from nuclear operators in order for the government to compensate victims for the losses exceeding their insurance coverage; they also urged to consider making nuclear operators reimburse the expenses incurred by the government to pay for the damages for the victims.²¹⁾

(b) The Act subsequent to WAGATSUMA Recommendations

Notwithstanding the WAGATSUMA Recommendations, the Act, a bill for which was prepared by the then government (of LDP), has not thoroughly reflected the original principle in which no victims should be left uncompensated. For example, in case of nuclear damage caused by a grave natural disaster of an exceptional character, Section 17 of the Act sets forth that "the Government shall take the necessary measures *to relieve victims* and to prevent the damage from spreading." (emphasis added) This governmental duty does *not* include compensation.²²⁾ In other words, in case the grave natural disaster causes nuclear damage, victims would be left uncompensated.²³⁾ This lack of compensation was

not intended by the WAGATSUMA Recommendations; on the contrary, they did recommend that in case of the grave natural disaster the government should compensate the victims, while a nuclear operator should be exempted from strict liability in that case because the statute should *not* be *absolute* liability.²⁴⁾

What worsens the victims' situation is the channeling of liability exclusively to a nuclear operator under the Act. The channeling of liability prohibits victims from seeking compensation from entities other than the operator.²⁵⁾ Thus, if a nuclear operator were exempted from liability due to the grave natural disaster, victims could

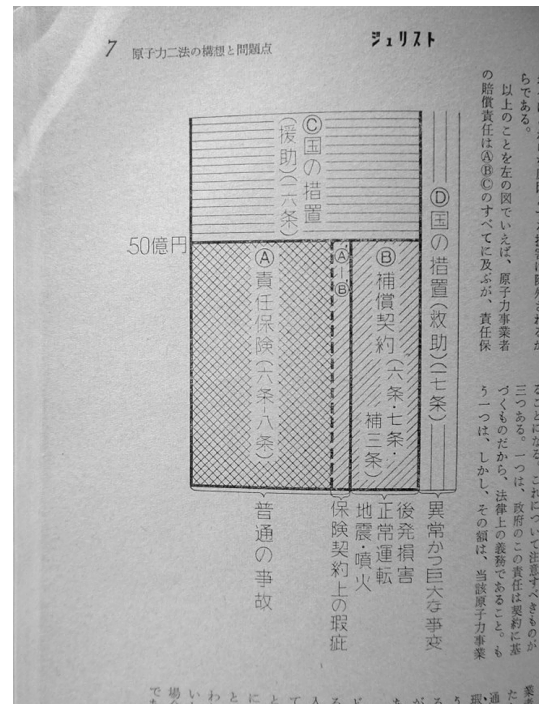


Figure 5: Gaps of Compensation

Dr. WAGATSUMA criticized the Act for failure to command the government to compensate the areas of "C" (losses exceeding Financial Security: §17 of the Act) and "D" (losses caused by a grave natural disaster of an exceptional character: §16 of the Act). WAGATSUMA, *Two Nuclear Power Acts*, *supra* note [20], at 7. JURISUTO issued in 1961 in Cornell Law Library's collection.

not receive compensation from not only the nuclear operator but also suppliers or contractors of the operator.²⁶⁾

And for losses exceeding coverage secured by Financial Security (*e.g.*, insurance) for a nuclear operator's liability, the Act has not thoroughly reflected the recommended principle that the government always should finally compensate victims. While Section 16 of the Act sets forth the governmental duty to support a nuclear operator in case of damages exceeding Financial Security, it puts two conditions precedent to the duty. The duty would accrue only when: (A) the government deems the support necessary; and (B) the National Diet approves it. This conditional duty was heavily criticized then by both the leading civil law scholars and nuclear industry because on the one hand a nuclear operator was clearly imposed of limitless liability, on the other hand the government did not commit clearly to support the operator who would bear enormous liability exceeding its financial capacity.²⁷⁾

2. Political Interpretation: To Compensate Victims, the 3/11 Tsunami Should Not Be Treated as "a Grave Natural Disaster of an Exceptional Character"

As explained above, the only statute practically available to victims for compensation failed to compensate them in case of: (i) losses caused by "a grave natural disaster of an exceptional character"; or (ii) damages exceeding the Financial Security covering a nuclear operator. Thus, in order to realize compensation based on the statute for the Fukushima-Daiichi-incident victims, the government had to fill in the gaps caused by (i) and (ii). Therefore, firstly the government had no choice but to make TEPCO accept an interpretation that the 3/11 tsunami did

not qualify as the "grave natural disaster of an exceptional character," even though how rarely huge actually it was. And secondly, the government should: (A) decide that it was necessary to financially support TEPCO; and (B) obtain the National Diet's approval for the financial support.

Consequently, the governmental behavior which seems inconsistent on its face could be explained from a principle of compensation. It is true that the governmental interpretation not exempting TEPCO from liability regardless of the huge 3/11 tsunami sounds odd to some commentators.²⁸⁾ And it is also true that the governmental policy to financially support TEPCO *after* labeling it as a liable entity (which means a wrongdoer) sounds odd to the public and mass media.²⁹⁾ But this peculiar interpretation and policy taken by the current government could be justified to achieve compensation of the victims. Without this peculiar interpretation and policy, it might be difficult for the government to implement quick and adequate compensation of the victims.³⁰⁾

B. A Core Reason for Keeping TEPCO as a Going Concern: A Bailout Scheme

An objective of compensating victims (on which the government put a priority) can explain why the government determined to support TEPCO financially. While TEPCO was not exempted from liability and its liability was *unlimited theoretically* under the Act, its financial capacity was *limited practically*. The Financial Security covering Fukushima Daiichi was only JPY 120 billion (US \$1.4 billion) which was too small to compensate the enormous losses caused by the large amount of radioactive contamination.³¹⁾ The assets of TEPCO themselves were not enough, even though TEPCO's financial scale

was ten times larger than Lehman Brothers'.³²⁾ In other words, the damages that TEPCO should pay for would definitely exceed its financial capability. No financial institute would lend money to such an entity without someone's support like governmental guarantees. Then, TEPCO would become insolvent. In that case, victims of the Fukushima Daiichi incident who have been creditors to TEPCO could not receive damages. That is because shareholders' liability is limited unless a corporate veil is pierced, which seldom takes place. Moreover, the victims, who are unsecured creditors, are inferior to secured creditors when TEPCO's assets, which cannot fulfill all of the creditors, are distributed under legal liquidation.³³⁾ Thus, without someone's support the victims again would be left uncompensated. Therefore, the current scheme, which has made it clear that the government would keep TEPCO as a going concern, can be justified from a viewpoint of compensation.

Actually, the two decisions (that is, (i) not ex-

empting TEPCO from liability; and (ii) supporting TEPCO financially) seem to have been made simultaneously in light of the timings when they were officially released.³⁴⁾ As a bargain for TEPCO's voluntary assumption of liability, the government seems to have promised that it would support TEPCO financially.

Meanwhile, the financial support by the government under the Compensation Facilitation Corporation Act does not mean that all of the resources necessary for TEPCO's bailout are financed by tax payers' money. Under the Act, both the nuclear power industry and the government shall fund a newly established governmental corporation ("NewCo") which plays a role of the cooperative fund³⁵⁾ for all nuclear operators (including TEPCO) with a retrospective effect to the Fukushima Daiichi incident.³⁶⁾ The nuclear power industry has paid half of the NewCo's capital and will keep on paying contributions to NewCo.³⁷⁾ When TEPCO (or any other eligible nuclear operator) wants to obtain major financial

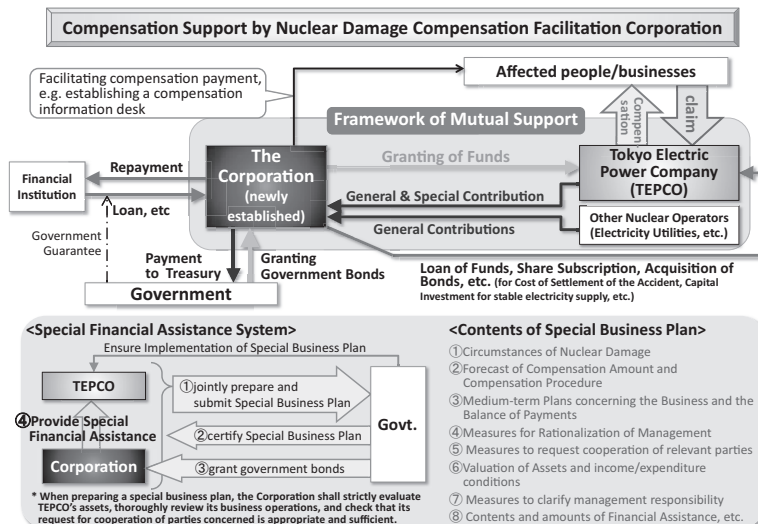


Figure 6: The Bailout Scheme for TEPCO

This chart is available at http://www.meti.go.jp/english/earthquake/nuclear/roadmap/pdf/20111012_nuclear_damages_1.pdf (last visited on July 19, 2012).

support (“special financial assistance”) from NewCo, it must prepare a “special business plan” with NewCo because Trade Minister’s approval thereof in advance is a condition precedent to the special financial assistance.³⁸⁾ To satisfy Trade Minister, the business plan must show TEPCO’s vigorous efforts to (i) squeeze out its assets as much as possible for compensating victims and (ii) take a harder line with stakeholders (*e.g.*, financial-institutes creditors) to receive their co-operation.³⁹⁾ Moreover, NewCo will pay back the governmental special financial assistance (which was received through governmental bonds) to the national treasury⁴⁰⁾ over an extended period of many years, using its resources coming mainly from the nuclear power industry’s contributions. Consequently, the scheme under the Act can be interpreted as showing the policy-maker’s efforts to internalize as much as possible the social costs which were externalized by nuclear operation, namely, the losses caused by the Fukushima Daiichi incident. And the scheme also seems to reflect WAGATSUMA Recommendations.⁴¹⁾

II. AVOIDING FURTHER DISASTERS IN ADDITION TO COMPENSATING VICTIMS

The political decision by the government to support TEPCO financially can be justified not only from a compensating-victims objective but also from other practical objectives to avoid further enhanced disasters. Multiple official records⁴²⁾ published by the government explain well those objectives based on which it determined politically to support TEPCO.

A. “Framework of Governmental Support to Tokyo Electric Power Company (TEPCO) to Compensate for Damage Caused by the Accident at Fukushima Nuclear Power

Station”⁴³⁾

The captioned framework (“Framework”) clearly sets forth the three objectives of the governmental support to TEPCO as follows: (1) compensation of victims; (2) stabilization of Fukushima Daiichi; and (3) stable supply of electricity to Tokyo and its surrounding areas. In other words, the government thought that had TEPCO become insolvent, these three objectives would have failed and additional disasters would have followed, namely: (1) a large number of uncompensated victims; (2) unstoppable radioactive leakage; and (3) power failure in Tokyo Metropolitan and surrounding areas. Because the author has explained already the (1) in the above, he will add some explanation on (2) and (3) in the section below.

B. Stable Electricity Supply, Stabilization of Fukushima Daiichi, and “Too Big To Fail”

After the 3/11 triple disaster, TEPCO became unable to supply electricity enough to meet the high demand in Kanto area including the Tokyo Metropolitan region.⁴⁴⁾ This was because a large amount of electricity had been produced by Fukushima Daiichi which was devastated by the huge tsunami.⁴⁵⁾ It took time before TEPCO could shift back to old fossil energy production to fill in the shortage of supply. Thus, before completing the shifting, TEPCO implemented the so-called “rolling blackouts” or “load shedding.”⁴⁶⁾ While the center of Tokyo evaded the rolling blackouts to circumvent a large impact on Japan’s economy and so forth, suburban areas in Tokyo and neighboring eight prefectures were all subject to the rolling blackouts including the author’s house and his main campus of Chuo University. Under the rolling blackouts, the subject

municipalities were divided into five groups. Each group in turn endured power cut-off for about three hours at a pre-planned date and time. Electricity to not only households but also factories and hospitals stopped altogether mercilessly. The author was unable to commute to his university for several weeks and the university was unable to hold even a commencement ceremony due to the rolling blackouts. Because of its severe inconvenience, the rolling blackouts were very unpopular and unfavorably perceived by the public in Kanto area. (They also enhanced a negative reputation of TEPCO further than before.) Therefore, the governmental objective of the stable supply of electricity seems to be understandable for the public.

Another objective of the governmental policy to support TEPCO financially was stabilization of Fukushima Daiichi. After multiple hydrogen explosions and meltdowns of three units of reactors at NPS, it took a long time before the situation thereat became stabilized. When Framework was published, Fukushima Daiichi was still in a

dangerous situation.⁴⁷⁾ Many contractors worked heavily and sometimes bravely to stabilize it.⁴⁸⁾ If TEPCO had become insolvent in the middle of the stabilization struggle, chaos might have followed. Thus, the governmental objective of stabilization of Fukushima Daiichi also seems to be understandable for the public.

In addition to the three objectives (*i.e.*, compensation, electricity supply, and stabilization of NPS) expressed clearly in Framework, many commentators indicated that TEPCO was financially “too big to fail.”⁴⁹⁾ They said that in order to prevent a financial crisis rippled from TEPCO’s insolvency, practically the government had no choice but to support it so that it could remain as a going concern.⁵⁰⁾ While this justification is not clear from the Framework, practically it is understandable in light of the recent financial crises occurred in the United States. The U.S. government experienced injections of tax payers’ money to automobile manufacturers and financial institutes to prevent enhanced crises, though that policy was criticized due to moral hazard and so



Figure 7: Stable Cooling Down of Nuclear Reactors Was Essential Policy

Source: Japan Ministry of Defense, Injecting water into Unit 3 of the Fukushima Daiichi Nuclear Power Station, available at <http://www.mod.go.jp/e/jdf/no22/photo/photo10.html> (last visited on Apr. 30, 2012).

forth.⁵¹⁾ Similarly, in Japan the “too-big-too-fail” reason does not seem to be understandable for the public.⁵²⁾

In summary, the governmental policy to support TEPCO financially so that it could remain as a going concern can be explained from *practical and political* viewpoints, while apparently the policy is inconsistent with the governmental interpretation of imposing liability on TEPCO. To compensate victims, which has been the first priority of the government, the government has interpreted that the 3/11 tsunami did not qualify as the grave natural disaster which should exempt TEPCO from liability. Then, to compensate victims and to avoid rippled effects caused by TEPCO’s insolvency such as blackouts, unstoppable radioactive leakage, and financial crises, the government has determined to support TEPCO financially so that it could survive.

III. SOCIAL RESPONSIBILITY OF THE GOVERNMENT WHICH PROMOTED SO FAR NUCLEAR OPERATION

As explained above, compensation and avoidance of further disasters were the main reasons for the governmental policy to allow TEPCO to survive through tax payers’ money regardless of TEPCO’s (possible) culpability. Moreover, Framework makes it clear that the government itself has responsibility to provide resources to realize compensation as the following excerpt therefrom states: “In recognition of the government’s social responsibility on nuclear energy policy, which has been promoted through the cooperation between the government and nuclear operators, the government will provide support to TEPCO under the framework of the [Nuclear Damage] Compensation Act,”⁵³⁾ As the

Framework says, the government has for a long time promoted nuclear operation as national policy. The government has also heavily regulated the operation, which means that the government has been deeply involved in the nuclear operation jointly with private nuclear operators. Because of this deep and joint involvement in the operation, Framework makes it clear that the government should take responsibility.

Interestingly, the above attitude is exactly what the old WAGATSUMA Recommendations, the origin of the Act, showed as their principle in half a century ago. As explained earlier in Part I. A. 1. (a), WAGATSUMA Recommendations took a principle that the government should finally compensate victims so that no victim would be left uncompensated “as far as the government would dare to promote unprecedented nuclear business as national policy.” And WAGATSUMA Recommendations urged that the governmental compensation should fulfill the losses uncovered by a nuclear operator’s insurance such as losses caused by the grave natural disaster and losses exceeding Financial Security covering the nuclear operator’s liability. The interpretation and policy of the current government (of JDP: Japan Democratic Party) seems as if it had implemented WAGATSUMA Recommendations as follows: firstly, the JDP government has interpreted that the 3/11 tsunami did not qualify as the grave natural disaster so that victims would not be left uncompensated; and secondly, it has adopted policy to support TEPCO financially so that the victims could be fully compensated. Moreover, the governmental support to TEPCO is to be provided through NewCo which receives contributions from the nuclear power industry.⁵⁴⁾ And NewCo shall pay back the governmental financial support (which was received through

governmental bonds) to the national treasury.⁵⁵⁾ These ideas to collect contributions from the nuclear power industry and to make NewCo reimburse the expenses incurred by the government appeared in the WAGATSUMA Recommendations.⁵⁶⁾

Consequently, the current JDP government's interpretation and policy of the Nuclear Damage Compensation Act (of 1961 as amended) and Compensation Facilitation Corporation Act (of 2011) respectively seems to reflect, or try to revive, WAGATSUMA Recommendations, which the old government (of LDP) did not realize fully when it drafted and made legislated the Nuclear Damage Compensation Act of 1961 in half a century ago.

IV. DOES THE CURRENT NUCLEAR DAMAGE COMPENSATION SCHEME IN JAPAN BECOME A NORMATIVE MODEL IN THE WORLD?

A. Compensation Facilitation Corporation Act

Does the current nuclear damage compensation scheme in Japan become a normative model in the world? The answer is both yes and no. It is yes as far as the Compensation Facilitation Corporation Act is concerned because it can become a normative model to show internalization of social costs incurred by nuclear operation⁵⁷⁾ and an objective of a sort of distributive justice/social welfare.

From the beginning, the losses caused by nuclear operation have been beyond a financial capacity of a private firm, even though TEPCO was ten times larger than Lehman Brothers.⁵⁸⁾ As WAGATSUMA Recommendations indicated in more than half a century ago, as far as the gov-

ernment wishes to promote nuclear operation as the national policy, it must assume its responsibility to compensate victims which is beyond a private firm's ability. Because the Compensation Facilitation Corporation Act admits the responsibility of the government and also it tries to internalize as much as possible the losses caused by nuclear operation in line with WAGATSUMA Recommendations, the Act can become a normative model desirable for the other nations too.

B. Governmental Interpretation of "a Grave Natural Disaster of an Exceptional Character" in the Nuclear Damage Compensation Act: An Over-Deterrent Side Effect

1. Exemption Limited to Disasters "Beyond the Imagination of Humankind"

But as to an issue of "a grave natural disaster of an exceptional character" which should arguably exempt TEPCO from liability under the Nuclear Damage Compensation Act (of 1961 as amended), the interpretation thereof taken by the government does not become a normative model because it seems to bolster erroneously over-deterrence.

As explained earlier, the government has taken a stance that TEPCO should not be exempted from liability because the incident did not qualify as the exempting event of a grave natural disaster of an exceptional character. As a ground for this interpretation, the government has argued that the grave natural disaster, which could exempt a nuclear operator, should be the one "beyond the imagination of humankind," citing legislative records.⁵⁹⁾ But this governmental interpretation limiting extremely the scope of exemption from liability connotes that TEPCO should have prevented the meltdowns and radioactive leak-

age triggered by the 3/11 tsunami, or even more huge natural disasters as far as they are within “the imagination of humankind.”

With respect to this issue, as law and economists analyzed, we must first understand that full internalization of resulting losses under strict liability does not, and should not, actually require that an actor engaged in an abnormally dangerous activity should increase her/his *precautions* exceeding their efficient level. Instead of that, strict liability just requires that s/he should decrease her/his *activity* to an efficient level rather than increase precautions overly to an inefficient level.⁶⁰⁾

But the public seems to misunderstand the meaning of not exempting TEPCO from strict liability on the ground that the unexceptionally huge 3/11 tsunami was within the imagination of humankind. The public seems to take that governmental interpretation as a normative message commanding TEPCO, or any other entity in the similar position, to prevent any and all unexceptionally huge natural disasters, including the 3/11 tsunami, as far as they are within the imagination of humankind. According to this misperception, a nuclear operator should take all and every countermeasure against, for example, an impact event like Armageddon, where a comet strikes the Earth, (and against any other natural disasters with only a slim possibility⁶¹⁾), because such an event is within humankind’s imagination. This misperception creates over-deterrence because precautions or prevention costs (“*PC*”) required for *any* grave natural disaster within humankind’s imagination seem to exceed an efficient level of *PC* and to be close to infinite one.

Consequently, the governmental interpreta-

tion, through misunderstanding by the public, leads to over-deterrence. Thus, that interpretation is not recommendable as a normative model or standard to determine the exempting “grave natural disaster of an exceptional character” used in several treaties on nuclear damage compensation.⁶²⁾ The interpretation is justifiable only to implement quick and adequate compensation in a Japan’s specific situation where unless otherwise the victims of the Fukushima Daiichi incident could have been left uncompensated because of the defect of the Act itself.

2. The Governmental Interpretation Contributing to a Myth of Absolute Safety

The governmental interpretation of the liability-exempting event under the Act bolsters “a myth of absolute safety,” a populace’s unreasonable desire peculiar to Japan. Therefore, neither is it recommendable as a precedent of legal interpretation of the Act⁶³⁾ domestically in Japan. In other words, that interpretation should be limited to the current Fukushima Daiichi incident. To explain this concern of the author, the Japan’s myth of absolute safety should be explained first in the following paragraph.

The author believes that rationally-minded-western readers can understand, as a matter of course, that no safety is absolute. This is because safety needs costs and because resources are scarce. If absolute safety were required, it would take infinite costs. Therefore, all and every safety has its limit including nuclear operation’s safety. But a populace in Japan is unwilling to accept this rational idea.⁶⁴⁾ And this rejection of the rational thinking by the populace prevented TEPCO and the regulating agency from implementing severe-accident-management measures which (possibly) might have prevented the inci-

dence.⁶⁵⁾

The absolute safety, which was, and still is,⁶⁶⁾ demanded by the populace in Japan, exceeds definitely an optimal level of safety.

$$\textit{Absolute Safety} \longrightarrow PC = \infty$$

$$\therefore PC \gg \textit{an Optimal Level of Care}$$

As shown above, the populace's irrational desire for absolute safety requires infinite precautions which exceed an optimal level of care. And ironically, this irrational desire for absolute safety is bolstered by the public perception created by the governmental interpretation that a nuclear operator should take all and any countermeasure against any event which is within humankind's imagination. This governmental interpretation is closer to absolute safety than to optimal safety. And both the governmental interpretation and the myth of absolute safety create an illusion that such absolute safety is attainable. But in reality, such safety is not attainable. In sum, the governmental interpretation of not exempting a nuclear operator from liability for harms caused by any huge natural disaster within humankind's imagination is not recommendable as a legal interpretative authority because of the following two reasons: (i) such an interpretation creates over-deterrence by itself among the public; and (ii) such an interpretation bolsters Japan's myth of absolute safety which creates also over-deterrence.

C. The Governmental Investigation Committee's Interim Report Not Recommendable to Show a Norm to Determine Blameworthiness for Refraining from Taking Measures against a Huge Natural Disaster

Another governmental interpretation of the incident, relevant to the issue of exempting TEPCO from liability under the Act, is shown in Interim Report published by the governmental Investigation Committee of the incident. The Interim Report suggests that the incident could, and should, have been avoided. This governmental interpretation, however, seems to be problematic because it seems to be influenced by cognitive errors, such as the hindsight bias and probability neglect, as explained in the following sections, and might lead to over-deterrence, too. Thus, this interpretation is not recommendable as a normative model when determining blameworthiness for refraining from taking measures against a huge natural disaster.

1. Preventability Suggestion Biased by Hindsight

With respect to preventability of the Fukushima Daiichi incident, the Interim Report alleges that TEPCO could have avoided, for cheap costs, the worst scenario, namely, total blackouts of cooling systems and meltdowns of multiple reactors. When TEPCO considered, on a trial basis before the incident, a possibility of a huge tsunami, it considered "building huge breakwater walls"⁶⁷⁾ as countermeasures. However, the idea of the countermeasures was rejected because of their large private costs as well as social costs compared with the remote possibility of a huge tsunami. The former private costs were estimated as "tens-of-billions JPY of cost and about four years . . . necessary for construction." And the latter social costs were evaluated as follows: "building embankments as tsunami countermeasures may end up sacrificing nearby villages for the sake of protecting the nuclear power stations. It may not be socially acceptable."⁶⁸⁾ Criticizing TEPCO's decision-making above, Interim Report

alleges “it must be able to protect [cooling systems] by designing watertight buildings strong enough to withstand the wave force.”⁶⁹⁾ Then, it continues that it was very cheap and feasible to protect only the cooling systems to avoid the worst scenario. Therefore, Interim Report suggests that TEPCO could, and should, have taken such pin-pointed countermeasures, even though the likelihood of a huge tsunami like the 3/11 one was very slim.

But this pin-pointed way of calculation of prevention costs (“*PC*”) has already been severely criticized in a different context by legal risk literature because it is based on hindsight rather than foresight⁷⁰⁾ as explained in the section below. Therefore, Interim Report’s suggestion that the incident was preventable was based on an erroneous analysis; it is not recommendable as a normative model when determining blameworthiness for refraining from taking precautions to prevent a huge natural disaster like the 3/11 tsunami.

Legal risk literature says⁷¹⁾ that in hindsight it is easy to think of an idea with very limited costs to prevent the concrete incident because in hindsight a person in the defendant’s position can focus on that concrete incident (*i.e.*, submergence of reactors’ cooling systems by the huge tsunami’s floodwater) which has actually happened when calculating *PC* for the incident. In foresight, however, the person in the defendant’s shoes should consider not only *that* abstract incident which has only slim likelihood. (Actually, information available before March 11, 2011 on a possibility of a huge tsunami’s occurrence did not include likelihood thereof. And the Interim Report itself suggests that the probability was very small.⁷²⁾ But also should the person in the defendant’s position

consider all of the other possible incidents with similarly small likelihood (such as an impact event like Armageddon which is within human-kind’s imagination, if the governmental interpretation has a normative meaning). And in foresight, those possible and abstract risks with small likelihood could be numerous.⁷³⁾ Thus, correct calculation of *PC* made in foresight rather than hindsight (“*PC* in Foresight”) should be much more, and might become irrationally higher, than the one made by the Interim Report.

Consequently, the way of calculation made by the Interim Report simply focusing on the 3/11 huge tsunami shows that it is biased by hindsight and therefore is not correct. Thus, it is not recommendable as a normative model to determine correctly blameworthiness for refraining from taking measures against huge natural disasters like the 3/11 tsunami.

Meanwhile, the author’s analysis herein does not mean that TEPCO’s *PC* were enough to exempt itself from liability. The author just indicates that the calculation of *PC* in Interim Report is not correct because of the hindsight bias. Thus, the Report might not be wrong in another portion if it indicates that a nuclear operator should take enough *PC* up to equal to its risk which is calculated by the large magnitude of losses (“*L*”) multiplied by the small probability (“*P*”).⁷⁴⁾

$$PC = \text{small } P \times \text{large } L$$

The author agrees with Interim Report in a portion which indicates that the risk (*i.e.*, $P \times L$) of the incident might become large, even though the *P* was very small, given that the *L* was large in

the Fukushima Daiichi incident. And the author agrees that the actor in that case might have to prevent the small-likelihood-but-large-magnitude incident, as indicated by *Wagon Mound (No. 2)*,⁷⁵ rather than by *Bolton v. Stone*.⁷⁶ Yet, a factual issue has not been resolved in the Fukushima Daiichi case as to whether the *PxL* would be equal to the large *PC* which would be required under *PC* in Foresight (rather than under the original hindsight version of the Interim Report's logic); as analyzed in the above, in the foresight *PC* would become much larger than the costs for just protecting the cooling systems in a pin-pointed manner because if the cooling systems should have been protected against the 3/11 tsunami, which had only remote likelihood, the other portions of Fukushima Daiichi in foresight should have been equally protected against any and all abstract and numerous natural disasters (including Armageddon), which had similarly remote likelihood. It depends on a factual matter which has not been

resolved by plausible evidence as to whether such countermeasures can be evaluated as cheap enough to take in light of the small-likelihood-and-large-magnitude-of-losses case in Fukushima Daiichi.

2. Emphasis on Precautions Influenced by Probability Neglect

As suggested above, Interim Report denies considering likeliness scale (*i.e.*, unlikekiness or improbability) of risks and urges to take countermeasures against any risk of a huge natural disaster regardless of its slight probability.⁷⁷ However, this kind of attitude tending to ignore likelihood of the risks especially in case of large magnitude of losses like a catastrophe is called "probability neglect" by legal risk literature as one of cognitive errors committed by a human being.⁷⁸ Interim Report seems to commit this error and can be read as alleging that all probabilities including slight ones should be presumed to be

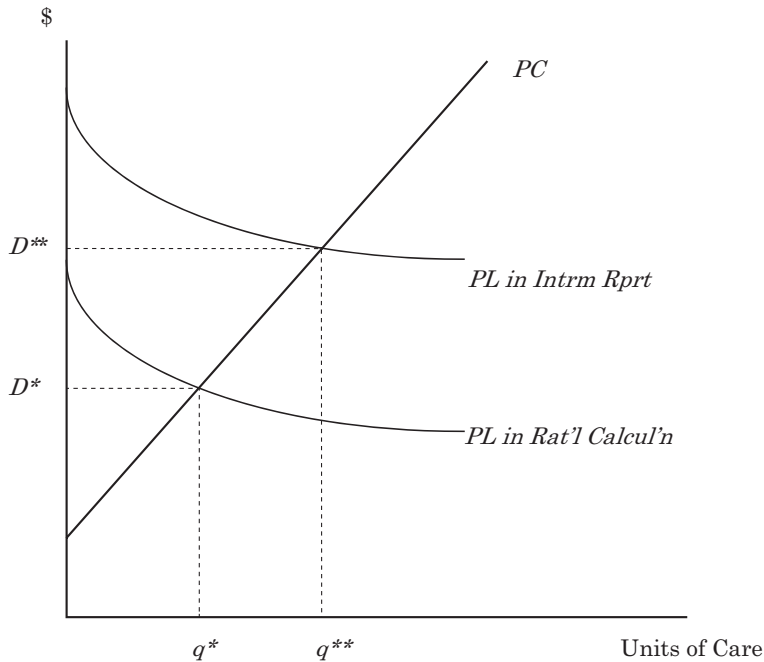


Figure 8: Over-deterrence Created by Probability Neglect

nearly 1.0 when calculating appropriate precautions or *PC*. This probability neglect might satisfy a populace in Japan who desires absolute safety. But usually likelihood of grave natural disasters like the 3/11 tsunami is much less than 1.0. Therefore, appropriate (*i.e.*, optimal) *PC* required under *rational* calculation are much less than the ones required under Interim Report.

This can be described by Figure 8.⁷⁹⁾ The horizontal axis represents the quantity of care taken by a nuclear operator. The vertical axis depicts the costs of care borne by the same. The upward-toward-right-hand slope of *PC* means the marginal costs of *PC* increase as more care is taken. The downward-toward-right-hand slopes of *PL* mean that the marginal expected costs of nuclear accident decline as more care is taken.

The optimal level of care occurs when the marginal *PC* equal the marginal benefits from reduced *PL*. This is because at that point the combined costs of *PC* and *PL* are minimized. In the rational calculation, q^* and D^* show respectively the optimal quantity of care and optimal costs of the same. Meanwhile, in Interim Report *PL* is higher than the one in the rational calculation because $PL = (P \approx I)xL$ rather than $PL = (P \ll I)xL$, as explained in the above. Therefore, the level of *PC* required in Interim Report indicates higher quantity of care (q^{**}) and higher costs of the same (D^{**}) than those required in the rational calculation.

Consequently, Interim Report's attitude, which seems to be biased by a cognitive error of probability neglect, shows over-deterrence. Thus, Interim Report is not recommendable as a normative model commanding to prevent a huge natural disaster with improbability.

Meanwhile, the author's analysis herein does not argue that we should ignore the large magnitude of losses ("*L*") in the Fukushima Daiichi incident. It need not be said that *L* was large in the incident. Neither need it be said that *PC* should be large if *L* is large even if *P* is small. But this logic does not justify probability neglect as Investigation Committee committed. Even if *PC* are large, there is a limit thereof. What the author is concerned about herein is how large appropriate *PC* should have been (for a populace in Japan to make an intelligent decision on whether TEPCO was blameworthy for refraining from taking measures against the 3/11 tsunami). To calculate correctly this amount, *P* should not be ignored even though Interim Report alleges it should be ignored. The slightness of *P* (*i.e.*, unlikelihood) should be taken into account to draw out correct *PC* out of the formula and to decide correctly whether the decision-making by TEPCO was wrong or not.

D. To Cure the Over-Deterrence Created by the Governmental Interpretation and Interim Report

1. Erasing the Wrong Message Created by the Governmental Interpretation

The cause of the problem of the governmental interpretation which leads to over-deterrence lies on the fact that the old Nuclear Damage Compensation Act of 1961 was not drafted as WAGATSUMA Recommendations thought of. Thus, the Act should be revised to comply with the Recommendations.

As explained earlier, the WAGATSUMA Recommendations thought that the government, rather than a nuclear operator, should compensate victims' losses caused by a grave natural dis-

aster of an exceptional character. That was because for those losses, which are beyond a nuclear operator's control, the operator should not be blamed (or liable). On the contrary to WAGATSUMA Recommendations, however, the then government drafted the Act in a way that the government would not owe a duty to compensate victims in case of the grave natural disaster. Because of the change of the Act's text from the WAGATSUMA Recommendations, expected victims of nuclear operation's incidents caused by grave natural disasters have been left uncompensated by anyone. Before the Fukushima Daiichi incident, this problem of lack of compensation had not materialized because such a rare incident caused by a grave natural disaster had not happened. Unfortunately, however, the 3/11 disaster occurred; therefore, the current government had no choice but to interpret that the rarely huge tsunami did not qualify as a grave natural disaster so that victims could receive compensation through TEPCO.

As far as this interpretation has the negative side effect of over-deterrence (especially in Japan where the myth of absolute safety is bolstered by the interpretation), the Act which required such an interpretation to compensate victims cannot become a normative model in the world. It must be revised as the original WAGATSUMA Recommendations contemplated. In other words, under the revised Act in case of a grave natural disaster of an exceptional character the government (through a NewCo-like fund collecting contributions from all nuclear operators) should compensate victims rather than a single private nuclear operator should.

2. Debiasing Investigation Committee and Educating the Public

(a) Debiasing Investigation Committee

According to literature on law and cognitive errors, the hindsight bias is hard to be erased.⁸⁰⁾ It is very difficult to erase from a brain the information on the incident which has actually happened when an evaluator retroactively assesses the defendant's decision-making after the incident.⁸¹⁾ That might be why the governmental Investigation Committee was influenced by the hindsight bias as explained before, even though Interim Report itself seems to allege that it tried to avoid the bias.⁸²⁾ Thus, in order to neutralize the strong bias which Interim Report cannot evade easily, it might be necessary to take some debiasing techniques. But unfortunately, it is difficult to invent an effective debiasing technique.⁸³⁾ Thus, the governmental Investigation Committee should take into considerations at least the following precautions (*i.e.*, debiasing efforts) before it releases reports or meeting minutes, or gives press conferences, in the future.

For example, it might be necessary for Investigation Committee to stop assuming that the 3/11 tsunami and incident were *foreseeable as well as avoidable* in a context where readers easily misunderstand the meaning of Investigation Committee's report(s), meeting minutes, and so forth.⁸⁴⁾ The purpose of the reports is to build better preventive measures toward the future by learning from the past.⁸⁵⁾ For that purpose (and only for that purpose), the assumptions that the incident was foreseeable and preventable might be acceptable. However, readers of the reports and the other press releases tend to take them as evidence to show culpability of TEPCO for failure to take those better preventive measures.⁸⁶⁾ But actually those better measures are proposed only

in hindsight and are based upon the assumptions that the incident was foreseeable and preventable. In other words, it is wrong, for the purpose of determining TEPCO's blameworthiness, to assume that (i) those better measures were available *before* the incident, or (ii) the incident *was reasonably* foreseeable or preventable. Those assumptions must be eliminated, from a viewpoint of neutrally assessing the decision made *before* an incident in order to determine culpability of a person who made that *past* decision. And legal risk literature analyzes that a human being is easily biased to assume that a catastrophic event could have been avoided and that some person(s) should be blamed for it even if actually s/he was not.⁸⁷⁾ Therefore, to neutralize these biases, it might be necessary to stop assuming that the tsunami and incident could have been reasonably foreseen or avoided when Investigation Committee's reports, meeting minutes, or press conferences can be erroneously misunderstood as showing blameworthiness of TEPCO's decision-making. To avoid the risks of misunderstanding, Investigation Committee should always ask itself as to whether a reasonable person in a neutral evaluator's position *before* the incident's occurrence could and would have commanded TEPCO to take such countermeasures as proposed by Interim Report (*e.g.*, just to protect cooling systems of reactors) based on the information available at that time (*e.g.*, only an abstract possibility of a huge tsunami without any information on likelihood thereof).

Meanwhile, it might need courage to stop assuming that the Fukushima Daiichi incident was foreseeable and avoidable in Japan where an anti-TEPCO atmosphere is so strong among mass media, the government, (and the public).⁸⁸⁾ However, it is necessary to make some debasing efforts ap-

propriately because it seems that many evaluators of the incident (*i.e.*, mass media, the government, and the public) emotionally tend to blame TEPCO for the bad result. But a bad result should not necessarily mean a bad decision-making; a good decision sometimes unfortunately ends up with a bad result, as literature on law and cognitive errors suggests.⁸⁹⁾ To neutralize the current emotional evaluations in Japan which are clearly vulnerable to cognitive errors as analyzed above, some debiasing efforts should be made.

(b) The Governmental Role to Educate Correctly the Public: Decreasing Nuclear Operation's Activities v. Increasing Its Safety

The myth of absolute safety in Japan, which has been shared in a sense by both a populace and the government, is one of the causes for over-deterrence in Japan, as explained before. In order to make an intelligent decision on optimal (not maximum) safety, the public should be educated to understand that absolute safety is just an illusion. And in educating the public the government (and mass media) should take the lead.

Emotionally it is understandable that the populace in Japan after this radioactive catastrophe wants nuclear safety as much as possible. But in rational mind and in the real world, it is impossible to implement absolute safety. Thus, facing an irrational demand for absolute safety, it is a duty for the government (and mass media too) to deny it and explain alternative rational calculation based on a cost-benefit analysis which is not biased by cognitive errors. On the contrary, however, the government including its Investigation Committee, who published Interim Report, has taken an attitude which has bolstered, rather than denied, the myth of absolute safety.⁹⁰⁾ That

attitude has been irresponsible because it has affirmed, rather than negated, a request which could never be fulfilled.

The cause of such an irresponsible attitude by the current government might lie on its nature. The current JDP government has been criticized as influenced too much by populism⁹¹⁾ in a sense that it has tended to satisfy immediate and shallow requirements of a populace such as “bread and circuses” like the old Roman Empire which fell after taking such a mob rule of passion rather than reason. What is required now in Japan is more rational thinking which would (hopefully) lead to a wiser intelligent decision not influenced by emotion or cognitive errors due to the shocking disaster. The government should lead the populace to that intelligent decision.

Meanwhile, the author herein does not argue that a populace in Japan should concur in promotion of nuclear operation. Rather (and on the contrary as explained in the following paragraphs), he argues that the government (and mass media) should ask the people in Japan as to whether they would accept nuclear operation even though it is not risk free. Of course, the selection is (and should be) based on an assumption that reasonable safety measures should be taken. But it should not be based on an assumption that nuclear operation should be absolutely safe. Before asking the people’s selection, the government (and mass media) should show to the people transparently and correctly reasonable safety level, rather than illusorily absolute safety level, of the nuclear operation so that the people can make an intelligent decision on the issue of the continuance of nuclear operation.

Given elements of and a principle behind strict

liability for harms caused by abnormally dangerous activities and what literature on law and economics analyzes on the strict liability, it might be a correct answer to decrease an activity level rather than to increase a safety level of nuclear operation in Japan. The strict liability requires that the abnormally dangerous activities must involve substantial risks which are unavoidable even though reasonable care is taken.⁹²⁾ And as explained earlier, the literature on law and economics analyzes that in those abnormally dangerous activities it is more efficient to decrease their activities rather than to increase their safety exceeding its optimal level.⁹³⁾

And as analyzed earlier in this piece, it would become over-deterrent and exceed an optimal level of safety to increase safety level of nuclear operation in Japan to the extent that it could prevent all nuclear incidents like the Fukushima Dai-ichi one even in case of any huge natural disaster within humankind’s imagination. Therefore, it is not efficient to keep nuclear operation in Japan, maintaining its activity level as it was before the incident, and increasing its safety level to become invincible in any and all giant natural disasters within humankind’s imagination. Rather than increasing its safety exceeding an optimal level, the people in Japan should decide to decrease nuclear operation’s activity level.

CONCLUSION

As a Japanese proverb says, it is difficult “to obtain two birds by throwing only one stone.” Japan’s nuclear damage compensation scheme has such a nature. It achieves an objective of compensating victims but fails to achieve another objective of optimal deterrence under tort law. The most major reason why the scheme fails to achieve optimal deterrence lies on the govern-

mental messages, which are consisted of the extremely narrow interpretation of the liability-exempting event and Investigation Committee's Interim Report. These messages are perceived by the public as follows: that a nuclear operator should prevent a nuclear incident (like the Fukushima Daiichi's one) even in case of any and all huge and countless natural disasters which are within humankind's imagination; and that TEPCO could, and should, have prevented the incident. The former perception clearly leads to over-deterrence because it requires quasi-infinite precautions. And the latter could also lead to the over-deterrence because to require preventive costs in foresight, rather than in hindsight, against a possible huge tsunami with slim likelihood entails inevitably to require other preventive costs as well against all and limitless huge natural disasters with similarly slim likelihood.

To rectify the over-deterrence indicated above while maintaining the compensation objective, it is necessary to revise the nuclear-damage-compensation scheme in Japan. For example, in case of a future huge natural disaster with slim likelihood close to the limit of humankind's imagination like the 3/11 tsunami, a nuclear operator should be exempted from liability, and the government should owe a duty to compensate victims. When the government performs its duty to compensate, it should utilize a fund like NewCo to internalize social costs of nuclear operation. This reflects straightly the original intent of WAGATSUMA Recommendations. And this can compensate victims without taking over-deterrent and controversial interpretation which limits the liability-exempting events to natural disasters beyond humankind's imagination.

And to cure over-deterrence which has been

created by the governmental messages and which bolsters the myth of absolute safety, the government should explain what it means to limit the liability-exemption event to natural disasters beyond humankind's imagination. Firstly, this limitation was necessary to evade a worst scenario where victims would be left uncompensated by anybody. Second, this limitation is not intended to encourage a nuclear operator to take its safety measures exceeding their optimal level. Rather than that, the limitation of the liability-exemption event shows internalization of social costs as much as possible so that a nuclear operator would be encouraged to reduce its *activity* until it reaches the socially optimal level. When explaining this truth, the government must make it clear that nuclear operation is not, and could not be, in the level of absolute safety. Rather than allowing nuclear operation to pretend to be risk free, the government must disclose how reasonably it is safe and where its limit exists. Only after disclosing such accurate and rational information for the public's intelligent decisions, the government may ask whether the public could accept continuance of nuclear operation.

The governmental Investigation Committee should also rectify its Interim Report which seems to have been influenced by the hindsight bias and probability neglect. Rather than assuming that the Fukushima Daiichi incident could, and should, have been avoided, Investigation Committee should make strong debiasing efforts and ask itself the following questions: (i) whether really in foresight, rather than in hindsight, it was reasonably possible to take such countermeasures as Interim Report proposes; and (ii) whether the proposed countermeasures could lead to over-deterrence because requiring to take precautions against a huge tsunami with a slim

possibility entails in foresight requiring to take the same against all of the other numerous natural disasters as well. Also Investigation Committee should stop ignoring likelihood of a natural disaster, while it is right to take into account the large magnitude of losses of a nuclear incident. Investigation Committee must make its efforts to show what optimal precautions are in light of not only the large magnitude of losses but also slim likelihood of the natural disaster. And after showing that optimal precautions have their limits at a certain level, Investigation Committee should clearly show to the public that it is more efficient to reduce an activity level of nuclear operation than to increase a care level thereof in order to decrease social costs relevant to nuclear operation.

(*) This piece was written on and before July 19, 2012 when the author was the visiting scholar at Cornell Law School. The earlier version of this piece originated from the author's talk at a conference, "3.11.12 Japan's Earthquake and Tsunami One Year Later," held on March 11 to 12, 2012 at Cornell University, Ithaca, New York. The author thanks Professors Annelise Riles and Hirokazu MIYAZAKI for giving him the opportunity to speak about the subject. And the author appreciates very much Professors Robert A. Hillman, Cornell University; Jeffrey J. Rachlinski, Cornell University; Pablo J. Martin Rodriguez, University of Almeria (Spain); and Dr. Lorenzo Spadacini, University of Brescia (Italy) for their precious comments. Of course, errors in this piece, if any, are solely attributable to the author.

注 (Notes)

1) See generally (The Great East Japan Earthquake Expert Mission 2011) [hereinafter referred to as "IAEA Report"]; (The Investigation Committee on the Accident at Fukushima Nuclear Power Sta-

tions of Tokyo Electric Power Company 2011) [herein referred to as "Investigation Committee's Interim Report" or just "Interim Report"].

- 2) A possibility of a huge tsunami which could reach 9-15m in height was calculated by TEPCO on a trial basis before the incident. Interim Report, *id.* VI. 3. (3) e., at 455-56; VI. 3. (6) b., at 467; VI. 3. (7) b. (a), at 473; VII. 6. (1) b. (c), at 588. But TEPCO did not think that it would actually occur because the basis (*e.g.*, location of the seismic source, earthquake size) of the trial calculation was speculative. *Id.* VI. 3. (7) b. (b), at 474-75. Thus, TEPCO conducted tsunami deposit surveys in the Fukushima region, which found no evidence to show an occurrence of a huge tsunami in the past near NPS. *Id.* at VI. 3. (8) a. (a), at 479. TEPCO also asked an outside academic association (that was, the Japan Society of Civil Engineers: JSCE) to review the trial calculation. *Id.* VI. 3. (7) b. (b), at 474-75. Moreover, while TEPCO waited for the results from JSCE's analysis, it began considering countermeasures against a possible huge tsunami at NPS, by establishing an internal "Working Group on Tsunami in Fukushima" in as early as August 2010. *Id.* VI. 3. (7) b. (b), at 475; VI. 3. (7) d., at 478. Unfortunately, however, the incident happened on March 11, 2011 before TEPCO could receive the results of JSCE's analysis, which could be received around October 2012. *Id.* VI. 3. (7) d., at 472.
- 3) Likelihood of a huge tsunami like the 3/11 one was thought to be very small. See Interim Report, *supra* note [1], VII. 9., at 601 (alleging that even though likelihood of the 3/11 tsunami was slim, TEPCO should have taken measures against it); VII. 10., at 604 (same). Actually, a long-term evaluation by Japan's Headquarters for Earthquake Research Promotion, which "proposed a new idea that large . . . tsunami earthquakes could occur in any region . . . including Fukushima [offshore], where [there were] no records of tsunamis in the past," was unable to "identify [] location of the seismic source or earthquake size" or any likelihood or probability of such a large natural disaster. See *id.* VI. 3. (3) e., at 455-56; VI. 3. (7) b. (b), at 474-75. The exceptionally and rarely huge scale of the 3/11 tsu-

nami is often said to be equivalent to the one of *Jogan* Tsunami, which occurred more than 1.1 millennium ago in A.D. 869. *See, e.g.*, (SEGAWA Sept. 14, 2011) (indicating that a giant tsunami once in a millennium repeatedly flooded the North East region of Japan).

- 4) Section 7 of the Nuclear Damage Compensation Act. In addition to the deposit at the national treasury, a nuclear operator can use a special arrangement of a kind of the governmental insurance under the Act on the Indemnity Agreement for Compensation for Nuclear Damage (Act No. 148 of 1961 as amended) where the government shall indemnify a nuclear operator in exchange for an indemnity fee. This Act covers a portion where nuclear operator's liability is uncovered by private-sector insurance available in a market, such as liability for nuclear harms caused by an earthquake or eruption. (TAKEUCHI 1961 : 37-38).
- 5) Section 3 of the Nuclear Damage Compensation Act.
- 6) For example, Mr. Yukio EDANO, then Chief Cabinet Secretary (*i.e.*, the governmental spokesperson), said, "[f]rom looking at... the current situation, it is impossible that Tokyo Electric would easily be exempted from liability for this accident." (FUJITA March 25, 2011). Moreover, Banri KAIEDA, then Minister of Economy, Trade and Industry, said later, on April 27, 2011, at the National Diet, "Could TEPCO be exempted from liability...? It wouldn't be absolutely permitted, given public opinion... I hope that TEPCO should behave well accepting its own liability without evading from it." (AOYAMA Aug. 22, 2011).
- 7) *See, e.g.*, (MORISHIMA 2011 : 141) (the leading tort law scholar arguing that the huge scale of the 3/11 tsunami was record-breaking and that no lawyer around him said it was not the grave natural disaster of an exceptional character). Meanwhile, my colleague professor at Chuo University, Tokyo, Professor Shuuya NOMURA, reportedly argued too that the 3/11 tsunami should qualify as the grave natural disaster of an exceptional character. (KUBO 2011 : 506).
- 8) *See* (SHIMIZU May 10, 2011) (TEPCO admitting voluntarily its liability and at the same time requesting financial support from the government) [herein referred to as "TEPCO's Formal Request to the Government"].
- 9) As of now, "only a handful of lawsuits" have been brought. (OSAKA 2012 : 458). Meanwhile, TEPCO's voluntary waiver of its defense based on a grave natural disaster of an exceptional character itself has become a cause of a lawsuit brought by a shareholder who has argued that TEPCO's waiver of the defense was an error, seeking for damages on the ground of a rapid decline in values of his TEPCO shares. (*Not Applying the Exemption* Oct. 20, 2011).
- 10) *See, e.g.*, (Editorial, The Asahi Shimbun, May 10, 2012) (alleging that "[use of the public fund] can only happen after the bankruptcy process is duly applied to TEPCO and the company's shareholders and creditors are made to pay the price for their own mistakes. / The government cannot hope to win public support for providing additional taxpayer money to the utility without taking such steps"); (*Tepco's nationalization* May 11, 2012) (saying that "[a]nd the public will not be happy to pay more money to Tepco, especially with so many lives still turned upside-down as a result of the Fukushima accident.>").
- 11) *See generally* (Nuclear Power Station Accident Economic Impacts Response Team May 13, 2011) [herein referred to as "Framework"]. The provisional translation of Framework is *available at* http://www.meti.go.jp/english/earthquake/nuclear/pdf/20110513_nuclear_damages.pdf (last visited on May 25, 2012) [herein referred to as "Provisional Trans. of Framework"].
- 12) *See supra* note [10].
- 13) *See supra* note [7].
- 14) Tort law is usually explained as being based on fairness or Aristotle's corrective justice, which is defined, for example, as follow: "a person who harms another through blameworthy [*i.e.*, wrongful] conduct should compensate the other person [to the extent of] the blameworthiness." (Kuklin 2000 : 583).
- 15) *See, e.g.*, OSAKA, *supra* note [9] (alleging that

TEPCO was liable because the 3/11 tsunami did not qualify as a liability-exempting event of “a grave natural disaster of an exceptional character” and because it was foreseeable). Her allegation is based on an interpretation that the exempting event must be beyond history as follows: “a great natural disaster of an exceptional character’ was a . . . natural disaster on a scale that generally had not been seen in history” *Id.* at 444-45.

16) See *supra* note [6].

17) See, e.g., Provisional Trans. of Framework, *supra* note [11].

18) (*Recommendations by Sakae WAGATSUMA* December 12, 1959) [herein referred to as “WAGATSUMA Recommendations”].

19) WAGATSUMA Recommendations, *id.*; TAKEUCHI, *supra* note [4], at 32 (a leading corporate law scholar explaining WAGATSUMA Recommendations).

20) (WAGATSUMA, *Two Nuclear Power Acts* 1961: 9) (author’s trans.) [herein referred to as “WAGATSUMA, *Two Nuclear Power Acts*”].

21) WAGATSUMA Recommendations, *supra* note [18]; (WAGATSUMA et al. 1961: 15).

22) See, e.g., WAGATSUMA, *Two Nuclear Power Acts*, *supra* note [20], at 9; TAKEUCHI, *supra* note [4], at 32.

23) The reason why the Act has become so different from WAGATSUMA Recommendations lay on an idea, which was different from WAGATSUMA Recommendations, taken by the then government, the drafter thereof. The relevant bureaucrats at that time thought that the state should not directly compensate victims whose losses: (i) partly caused by a private firm’s activity; and (ii) which the firm should not be obliged to compensate due to the grave natural disaster. WAGATSUMA, *Two Nuclear Power Acts*, *supra* note [20], at 8–9. The grounds for this bureaucrats’ idea were: (i) there had been no such precedent; (ii) theoretically the state should not become liable for harms caused by a private firm’s activity; and (iii) had the state become liable for such harms, it would have been forced to pay for damages caused by a private firm’s activity *not* in nuclear business *too* and the

state’s debt would have become uncontrollably huge. WAGATSUMA et al., *supra* note [21], at 13.

24) See WAGATSUMA Recommendations, *supra* note [18]; WAGATSUMA, *Two Nuclear Power Acts*, *supra* note [20], at 10; WAGATSUMA et al., *supra* note [21], at 15, 17.

25) Section 4 of the Act. Meanwhile, under the Act a nuclear operator is prohibited from seeking indemnity from suppliers or any third party unless the latter “willfully caused the damage” or “entered into a special agreement [with the nuclear operator] regarding rights of recourse.” Section 5 of the Act. Therefore, practically, a nuclear operator is the only available subject exposed to liability for harms caused by nuclear operation in Japan.

26) *But see* (OTSUKA 2011: 40) (alleging that theoretically victims could seek compensation from the state based on the State Redress Act (Act No. 125 of 1947). But it seems very difficult to obtain damages under the State Redress Act because the plaintiffs are required to prove the state’s fault).

27) WAGATSUMA et al., *supra* note [21], at 19. Meanwhile, the reason why the Act added such conditions on the governmental duty to support, which were different from the original intention of WAGATSUMA Recommendations, lay on the fact that the then government was concerned about the then small national budget which could not accept a mandatory and open-ended duty to support a liable nuclear operator without any condition. TAKEUCHI, *supra* note [4], at 35.

28) See *supra* note [7].

29) See *supra* note [10].

30) Theoretically, the government might be able to prepare a new bill from the scratch to enable the state to compensate victims directly, even if TEPCO had been exempted from liability under the Nuclear Damage Compensation Act due to the grave natural disaster. For example, in the U.S., the September-11th Victim Compensation Fund of 2001 (“9/11 VCF”), 28 C.F.R. 104 (2003), was enacted very quickly after the 9/11 attacks. But the author is not in a position to know why the government of Japan did not take such an action. But that action might be hard to be taken for some practical rea-

- son(s), especially given that Japan had already had the old Nuclear Damage Compensation Act (of 1961 as amended) which was supposed to govern the situation.
- 31) *See, e.g.*, (TABUCHI May 9, 2012) (“The government has separately committed 2.4 trillion yen (\$30.1 billion) in tax payer money to meet compensation payments arising from the accident. But estimates of the payments that Tepco might have to make have reached *many tens of billions of dollars*, making further government support likely.”) (emphasis added); (Johnson May 3, 2011) (Bank of America / Merrill Lynch said the damages could reach \$130 billion if the crisis drags on); (*UPDATE 1* Mar. 27, 2012) (reporting that compensation payments only for the current fiscal year would reach JPY 800 billion which was US\$9.66 billion). Meanwhile, losses caused by the Fukushima Daiichi incident including damages for victims would reach at least JPY 5.8 trillion, according to the governmental Cost Review Committee Report. (Cost Review Committee Dec. 19, 2012: 43).
- 32) (Pilling Apr. 13, 2011).
- 33) *See* (Editorial Desk, The Yomiuri Shimbun, May 8, 2011) (indicating that “if [TEPCO] goes through legal liquidation, repayment of the [corporate] bonds [of about 5 trillion yen] would be given priority under the Electricity Business Law and nuclear-crisis related compensation payment would have to be made afterward.”).
- 34) It took only three days for the government to decide and publish its intention to support TEPCO financially after receiving TEPCO’s request for it. *See* Provisional Trans. of Framework, *supra* note [11]; TEPCO’s Formal Request to the Government, *supra* note [8].
- 35) The NewCo collects contributions “under the concept of mutual support among nuclear business operators.” (Cabinet Secretariat Aug. 2011: 1) [herein referred to as “Outline of the Compensation Facilitation Corporation Act”].
- 36) Supplementary Provision 3 (1) of the Compensation Facilitation Corporation Act (setting forth that the Act applies to a nuclear accident took place before its effective date). NewCo will support a nuclear operator when its liability exceeds its Financial Security amount set forth in the Nuclear Damage Compensation Act. Section 1 of the Compensation Facilitation Corporation Act. There are two kinds of NewCo’s financial support to nuclear operators: (i) “ordinary financial assistance,” which can be made fundamentally by NewCo’s own decision, such as granting funds, subscribing shares, purchasing corporate bonds; and (ii) “special financial assistance” based on a “special business plan,” which requires approval of Minister of Economy, Trade and Industry, when NewCo demands the governmental financial support through issuance of the governmental bonds. The ordinary financial assistance is set forth in Sections 41 to 44 of the Compensation Facilitation Corporation Act and the special financial assistance is set forth in Sections 45 to 47 thereof. *See also* Outline of the Compensation Facilitation Corporation Act, *supra* note [35], at 2. TEPCO has demanded the special financial support from NewCo. *See* (TEPCO Press Release Mar. 27, 2012).
- 37) The government injected JPY 7 billion (US\$91 million) and the nuclear power industry also did the same amount. *See* (*Nuclear operators to pay 7 billion yen* Sept. 9, 2011); Section 52 of the Compensation Facilitation Corporation Act; Outline of the Compensation Facilitation Corporation Act, *supra* note [35], at 3.
- 38) *See supra* note [36].
- 39) Outline of the Compensation Facilitation Corporation Act, *supra* note [35]. Section 45 (2) of the Act.
- 40) Section 59 (4) of the Compensation Facilitation Corporation Act. Outline of the Compensation Facilitation Corporation Act, *supra* note [35], at 3.
- 41) *See supra* text accompanying note [21].
- 42) *See, e.g.*, Provisional Trans. of Framework, *supra* note [11]; Outline of the Compensation Facilitation Corporation Act, *supra* note [35], at 1.
- 43) Provisional Trans. of Framework, *supra* note [11].
- 44) *See, e.g.*, (KUBOTA May 8, 2012) (“Prior to Fukushima disaster, Tepco . . . provides electricity to some 45 million people in the Tokyo area, was

- the most powerful of Japan's ten utilities that are regional monopolies.") (emphasis added).
- 45) *See, e.g.*, (Murphy Mar. 15, 2011).
- 46) *See, e.g.*, (ITO & NAGATA Mar. 14, 2011).
- 47) *See, e.g.*, (TEPCO, *A One-Year Review of Fukushima Daiichi* Mar. 2012: 54) (indicating that "[s]tabilization" or "a cold shutdown condition and Step 2 of Roadmap towards Restoration" was completed on December 16, 2011). Meanwhile, Framework was published on May 13, 2011. *See supra* note [11].
- 48) *See, e.g.*, (*The Forgotten Heroes of Fukushima* Jan. 2012) (stating that "some 18,000 workers have been sent to help clean up the crippled Fukushima Daiichi nuclear power plant" along with photographic images of those who worked for the stabilization).
- 49) *See, e.g.*, Pilling, *supra* note [32] (indicating that TEPCO is 10 times larger than Lehman Bros).
- 50) *But see* (TAKENAKA June 3, 2011) (Prof. TAKENAKA, an economist and ex-Minister of State for Privatization of the Postal Services, suggesting that it was possible for the government to make stakeholders take responsibility by nationalization of TEPCO, which could maintain stable supply of electricity and so forth).
- 51) *See, e.g.*, (*The Presidency of Barack Obama* May 29, 2012) (explaining the governmental bailouts for bankrupt auto manufacturers and financial institutes in 2008 to 2009); (Bernardo et al. 2011 : 2) (indicating that the U.S. governmental bailout was not well perceived due to moral hazard).
- 52) *See supra* note [10].
- 53) Provisional Trans. of Framework, *supra* note [11], at 2.
- 54) *See* text accompanying *supra* note [37].
- 55) *See* text accompanying *supra* note [40].
- 56) *See* text accompanying *supra* note [21].
- 57) Internalization of social costs by strict liability seems to be appropriate because nuclear damage caused by nuclear operation is a typical unilateral risk, rather than a bilateral risk, and because the substantial risk of the nuclear damage does not seem to be eliminated by taking reasonable care. For an argument that a nuclear damage compensation system should internalize social costs of nuclear operation, see, *e.g.*, (Faure 2009 : 271–72) (arguing that the Price-Anderson Act, 42 U.S.C. §2012 (2006), is preferable to other nations' statutes where the governments compensate victims for the portions of losses exceeding nuclear operators' liability caps).
- 58) *See supra* note [32] and accompanying text.
- 59) Representing the government, Chief Cabinet Secretary Yukio EDANO said on May 2, 2011 in the National Diet as follows :
- At a Diet session in 1961, a grave natural disaster of an exceptional character was explained as one beyond the imagination of humankind The [March 11] earthquake was a very large one, but it was of a scale that had been experienced by humankind in the past.
- (URANAKA May 2, 2011) (emphasis added).
- 60) *See, e.g.*, *Ind. H. B. R.R. Co. v. Am. Cyanamid Co.*, 916 F.2 d 1174, 1177 (7th Cir. 1990) (Posner, J.). Analyzing strict liability for harms caused by abnormally dangerous activities, Justice Posner said as follows :
- By making the actor strictly liable—by denying him in other words an excuse based on his inability to avoid accidents by being more careful—we give him an incentive, missing in a negligence regime, to experiment with methods of preventing accidents that involve not greater exertions of care, assumed to be futile, but instead relocating, changing, or reducing (perhaps to the vanishing point) the activity giving rise to the accident.
- Id.* (emphasis added). Under strict liability the injurer is assumed to be liable even if s/he takes reasonable care. Thus, as *homo economicus*, s/he naturally would take both the following measures: (i) increasing her/his care until it reaches (and before it exceeds) an optimal level; and (ii) reducing her/his socially excessive activity until it reaches the socially optimal level. *See* (Shavell 1980 : 2–3).
- 61) Likelihood of an occurrence of a giant tsunami like the 3/11 one was very slim. *See supra* note [3]. Meanwhile, for cost-benefit analyses of various pos-

- sible catastrophic events with slight probabilities, including an asteroid collision like Armageddon (Touchstone Pictures, 1998), see (POSNER 2004 : 25) (reporting that a 1.7-kilometer-diameter asteroid collision has a 1/360,000 annual probability and could kill 1.5 billion people on the earth).
- 62) For example, the following treaties use the same language to express a liability-exempting event: Vienna Convention on Civil Liability for Nuclear Damage, opened for signature May 21, 1963, 1063 U.N.T.S. 266 (The 1963 Vienna Convention); Convention on Third Party Liability in the Field of Nuclear Energy, opened for signature July 29, 1960, 956 U.N.T.S. 264 (The Paris Convention); and Convention on Supplementary Compensation for Nuclear Damage, opened for signature Sept. 12, 1997, 36 I.L.M. 1473 (CSC or the 1997 Supplementary Convention).
- 63) Of course, strictly speaking, the governmental interpretation is not a legal precedent in a sense of a judicial court opinion. As of the time when the author is writing this piece, there has been no such a precedent. But the author is concerned about a probability that the governmental interpretation, even though which is only a kind of a secondary authority, might become a *de facto* standard for future judicial and administrative interpretations.
- 64) See, e.g., Interim Report, *supra* note [1], Executive Summary, at 18 (arguing that the public should admit first that “an absolute safety never exists.”). See also (KUBOTA & HAMADA Apr. 6, 2012) (resisting restarts of nuclear power stations in her prefecture after the incident, the Governor of Shiga Prefecture strongly asserting that “[w]e cannot say yes to restarts [of nuclear power stations in her prefecture] until we are certain that they are *absolutely safe*.”) (emphasis added).
- 65) Interim Report, *supra* note [1], VII. 7. (4), at 596. Thus, for example, even saying just “severe” accident was taboo in Japan. *Id.* VI. 4. (1) a. (b), at 482 (“the use of an expression such as ‘severe accidents’ is usually avoided in consideration of social acceptability, and use the wording ‘accident management’ instead of ‘countermeasures against severe accidents.’”). Meanwhile, the author has inserted a word, “possibly,” in the text because he has a strong doubt about Interim Report’s idea that severe-accident-management measures could have prevented the incident. Basis of the author’s doubt lies on the fact that International Atomic Energy Agency (IAEA) has admitted that even its severe-accident-management guidelines (“Guidelines”) available *ex ante* could not have prevented the Fukushima Daiichi incident because the Great East Japan Earthquake and Tsunami and resulting incident were too devastating to be managed by the Guidelines. See IAEA Report, *supra* note [1], Summary, at 49–50, 54.
- 66) See KUBOTA & HAMADA, *supra* note [64] (the Governor asserting absolute safety even after publication of the governmental Investigation Committee’s Interim Report which has requested the public to abandon such an irrational myth).
- 67) Interim Report, *supra* note [1], VI. 3. (7) b. (b), at 468–70.
- 68) *Id.* at 478, 470.
- 69) *Id.* VI. 5.(2), at 542–43.
- 70) (Viscusi 2000 : 586–87).
- 71) See *id.*
- 72) See, e.g., Interim Report, *supra* note [1], VII. 9., at 601; VII. 10., at 604.
- 73) Actually, TEPCO’s personnel testified as follows: “Yes, in hindsight, we were not sufficiently prepared at TEPCO, in terms of awareness and organization, to introduce comprehensive measures to address the risk of natural disasters”; “We never thought of the occurrence of natural disasters beyond design basis assumptions”; and “We believed that if one were to begin to assume an external event in the form of a natural disaster there’d be no end to it.” *Id.* VII. 6. (2) a., at 590 (emphasis added).
- 74) The formula used herein is based on the famous Hand Formula (“ $B < PL$ ”) in *United States v. Carroll Towing Co.*, 159 F.2 d 169 (2d. Cir. 1947). Even under strict liability, a cost-benefit analysis based on Hand Formula seems to be useful to draw out an optimal level of care under an approach balancing risk (*i.e.*, $P \times L$) against precautions (that is PC in this piece and B or burden in Hand Formula). More-

over, even under strict liability, reasonable foreseeability of a *force majeure* event and reasonable preventability of losses caused thereby are elements of an affirmative defense based on the *force majeure*. In that sense, elements of reasonable (foreseeability and) preventability of losses caused by a natural disaster under strict liability resemble those of negligence. See (Binder 1996: 65) (indicating that “[t]his concept of reasonableness [under negligence liability] is mirrored by the [strict liability’s] act of God cases in which courts provide that an act of God exists only when reasonable foreseeability and reasonable measures would not prevent the incident.” (emphasis added)). And as the following Professor TAKEUCHI’s comment clearly shows, reasonably practicable costs of prevention are an element to determine whether the natural disaster like the 3/11 tsunami qualifies as the liability-exempting event of “a grave natural disaster of an exceptional disaster”: TAKEUCHI, *supra* note [4], at 31 (a leading corporate professor explaining that “a grave” and “with an exceptional character” under the Nuclear Damage Compensation Act should be limited to a case which is too giant to be prevented by preventive measures with reasonable costs).

While reasonable preventability under the strict liability’s natural-disaster defense is like an element in the negligence theory, the hindsight bias in Japan seems to turn the negligence-like analysis into “quasi-strict liability” by imposing liability on TEPCO whose decision to refrain from taking measures against a huge tsunami does not seem to have been unreasonable. As explained earlier at notes 2 & 3, likelihood of the 3/11 tsunami was slim; and as explained in text accompanying notes 70–73, preventive costs in foresight (“PC in Foresight”) seem to become very large; therefore, it does not seem to have been very unreasonable to refrain from taking countermeasures against a huge tsunami before the incident. Even though the decision made does not seem to have been so unreasonable in foresight, TEPCO has been treated as liable in hindsight by the government as well as by its Investigation Committee. For the quasi-strict liability

theory, see (Rachlinski 1998: 597).

- 75) Overseas Tankship (U.K.) Ltd. v. Miller Steamship Co., Pty. (*The Wagon Mound (No. 2)*), [1967] 1 A.C. 617 Privy Council. In *Wagon Mound (No. 2)*, the S. S. Wagon Mound chartered by the defendants leaked a large amount of furnace oil into Sydney Harbor. That furnace oil was “very difficult to ignite upon water” and “this had very rarely happened . . . only in very exceptional circumstances . . .” But, unfortunately, the oil set afire because pieces of hot metal flew off and fell into the ocean while some ships were under repairs involving welding work. Those ships owned by the plaintiffs were burned. Reversing trial court’s finding that the accident was not reasonably foreseeable, Lord Rein decided that “a reasonable man in the position of the defendants’ servant . . . surely would not neglect such a [remote but real] risk if action to eliminate it presented no difficulty, involving no disadvantage, and required no expense.” *Id.* at 643–44. In sum, *Wagon Mound (No. 2)* says that given large magnitude of losses of a remote but real risk, a reasonable person owes a duty to prevent such a risk, even though the likelihood thereof is slim, unless the preventive costs are too expensive.
- 76) *Bolton v. Stone*, [1951], A.C. 850 (H.L.) (U. K.). In *Bolton* a cricket ball went out over a fence of a cricket field and hit an unlucky victim who happened to walk on a road nearby. And such an accident was found to be very rare; therefore, the defendant was determined to be not liable. This *Bolton* is a leading tort case where *P* was slim like *Wagon Mound (No. 2)*. But the facts in *Bolton* were different from those in *Wagon Mound (No. 2)* because in the latter case *L* was much larger than the one in the former. Likewise, magnitude of losses in the Fukushima Daiichi incident was very, very large.
- 77) See Interim Report, *supra* note [1], VII. 9., at 601; VII. 10., at 604.
- 78) (Sunstein 2002: 62–63).
- 79) Figure 8 in the text is fundamentally based on the idea shown in (POSNER 1992: 165, fig. 6.1).
- 80) See (Rachlinski 1999: 823) (indicating that “The hindsight has proven difficulty to avoid. . . . The

- hindsight bias, however, is resistant to all debiasing techniques. This failure has arisen because the bias results not merely from an inability to suppress or ignore knowledge of the outcome but from the natural tendency to use outcome knowledge to make further inferences.”).
- 81) The cause of difficulty to debias the hindsight bias can be explained plausibly as follows: “When assessing the predictability of past events, however, the outcome must be ignored. Perhaps because such judgments are so uncommon and unnatural, people have difficulty making them accurately.” *Id.* at 824.
- 82) See Interim Report, *supra* note [1], I. 3., at 5. Meanwhile, other than this piece, the following news article (comment) criticizes Investigation Committee’s Interim Report for its erroneous probability neglect and its arrogant attitude to blame TEPCO in hindsight: (HIGASHITANI Jan. 11, 2012).
- 83) See *supra* note [80].
- 84) Not only formal reports released by Investigation Committee but also (informal) information released or leaked during its investigation can be misunderstood by mass media as well as by the public. See, e.g., (*TEPCO Knew Waters Could Reach 15 Meters* Aug. 27, 2011) (blaming TEPCO for refraining from taking countermeasures against a huge tsunami in spite of TEPCO’s knowledge about a possibility thereof. This news article is based on the discovery during Investigation Committee’s investigation and seems to be biased by the hindsight and was published long before Investigation Committee formally published Interim Report in December 2011).
- 85) See Interim Report, *supra* note [1], I. 3., at 4. It states as follows:
- The Investigation Committee is working . . . to clarify what should have been done to prevent it or to control the spread of damage so that we may learn from the accident and so that those lessons may assist our descendants to make the correct judgments and behave appropriately.
- 86) See, e.g., *TEPCO Knew Waters Could Reach 15 Meters*, *supra* note [84].
- 87) (Tyler & Thorisdottir 2003: 365).
- 88) See, e.g., Editorial, *The Asahi Shimbun*, May 10, 2012, *supra* note [10]. See also OSAKA, *supra* note [9], at 433 (indicating that “TEPCO . . . has drawn heavy criticism from around the world” without any citation).
- 89) As an example of a legal rule which reflects a concept where even a good decision sometimes (or often?) ends unfortunately in a bad result, please consider the business judgment rule for D&O’s liability in a corporation. An impartial management’s risk-taking decision, for example, an M&A decision to buy a firm in exchange for a certain value, after fully informed of and discussing on the proposed purchase does not have to result in profits after, say, five years even though financial advisers predicted that the target firm would become lucrative after the five years. If the business judgment rule did not protect the management in the above scenario, which the author himself experienced often as an inhouse attorney at big corporations in Japan, business activities in general would become shrunk. For the psychological explanation of the business judgment rule, see, e.g., Rachlinski, *Judging in Hindsight*, *supra* note [74], at 620–21.
- 90) The fact that Investigation Committee bolsters a myth of absolute safety is ironical because its Report argues that the public should admit first that “an absolute safety never exists.” Interim Report, *supra* note [1], Executive Summary, at 18. On the contrary to its argument, Interim Report, which is influenced by, for example, probability neglect (that is, $P \approx 1.0$) as analyzed earlier in Part IV C. 2, ends up with over-deterrence like absolute safety.
- 91) The government organized by Japan Democratic Party (JPD) is criticized as “too much influenced by populism.” (*CEO of Tokyo Stock Exchange Argues for Legal Liquidation of TEPCO* June 4, 2011) (The CEO of Tokyo Stock Exchange, who handled reorganizations of famous Japanese big firms, saying that the current government was too much influenced by populism.).
- 92) RESTATEMENT (SECOND) OF TORTS §520 (c) (an activity is determined as “abnormally dangerous” in light of, *inter alia*, “inability to eliminate the risk by

the exercise of reasonable care”).

93) *See supra* note [60].

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