THE IMPACT OF THE CONVENTION ON SUPPLEMENTARY COMPENSATION FOR NUCLEAR DAMAGE

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This Note analyzes the impact of the Convention on Supplementary Compensation for Nuclear Damage (CSC) in light of the dual purposes of international agreements on civil liability for nuclear damages, ensuring victim compensation for transnational damages and safeguarding the long-term viability of the nuclear power industry from liability for nuclear accidents by establishing rules to control industry liability. Particular emphasis is placed on the impact of the CSC on the two major users of nuclear power in the CSC, the United States, and Japan. While there are valid concerns about the provisions of all international agreements on nuclear liability, including the CSC, this paper argues that the CSC effectively controls industry liability but will likely prove to be of little impact for domestic victims in either the United States or Japan.

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I. INTRODUCTION

With Japan’s ratification of the International Atomic Energy Agency (IAEA)-affiliated Convention on Supplementary Compensation for Nuclear Damage (CSC) on January 15, 2015, the CSC took effect on April 15, 2015, the newest international agreement in the labyrinthine world of nuclear damage compensation agreements.1 International agreements on civil liability for nuclear damages, of which the CSC is one, are designed to ensure victim compensation for transnational damages and safeguard the long-term viability of the nuclear power industry from liability for nuclear accidents by establishing rules to control industry liability.2 This paper analyzes the impact of the CSC in light of these two purposes, with particular emphasis on the impact of the CSC on the two major users of nuclear power in the CSC, the United States and Japan. The main proponents of the CSC are national governments, who highlight its ability to be a truly global treaty system, promote victim compensation through provisions stronger than other treaties which have taken effect, and control industry liability.3 Critics of the CSC such as Prof. Currie and the Japan Federation of Bar Associations assert that, while it provides better protection for victims that some

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other treaties, limits on damages, concentration of claims in the country in which an accident occurs, short statutes of limitations, and poor membership in the treaty systems mean that it is still deficient.4

While there are valid concerns about the provisions of all international agreements on nuclear liability, including the CSC, this paper argues that the CSC effectively controls industry liability but will likely prove to be of little impact for domestic victims in either the United States or Japan. The provisions of international agreements which limit liability for nuclear damages by concentrating liability on operators of nuclear reactors are favorable to exporters of nuclear technology. However, the CSC also does not substantially alter the compensation system for domestic accidents for victims in the United States or Japan because it only establishes minimum standards which national legislation can and does exceed in both and United States and Japan and provides a relatively minor amount of additional compensation. In addition, both states are less likely to suffer transnational nuclear damages due to their comparatively isolated geographical location as compared to European states.

First this paper will examine the history of international agreements on civil liability for nuclear damages, reviewing the terms of the three treaty systems, the Paris Convention, the Vienna Convention and the CSC and investigating the reasons that states join, or do not join, these regimes. Second, this paper will describe the U.S. system for the compensation of nuclear damage and the changes made to it to implement the CSC. Third, this paper will do the same for the Japanese nuclear damage compensation system. Fourth, this paper will then show how the CSC protects the nuclear industry from heavy liability but does little to expand victim protection. Lastly this

paper will introduce the IAEA’s suggestions for improving the current regime.

II. PROVISIONS AND HISTORY

This section will introduce the provisions and history of the CSC and the Conventions which proceeded it, the Paris Convention, the Brussels Supplementary Compensation, and the Vienna Convention, noting the current fragmented nature of the network of international agreements and how this limits their utility. This section will also show how the diverse interests of the parties caused this fragmentation. A more focused analysis of how the terms of the CSC accomplish the goals of international agreements on civil liability and change the nuclear damage compensation systems of the United States and Japan will be conducted later in this paper.

As previously mentioned, such international agreements are designed to address the compensation of transnational damages. In a world without international agreements addressing liability for transnational nuclear damage, liability would be governed by the domestic law of the nations involved. Most nations have laws that remove liability for damage from nuclear power from the normal law of tort and concentrate liability on the operator of the nuclear power plant. At the outset of the nuclear age in the 1950s and 1960s, states interested in promoting the peaceful use of atomic energy determined that the ordinary rules of tort law would on one hand inhibit victims from showing which parties were liable for their harm and on the other expose nuclear operators, builders, and suppliers, etc., to uninsurable liability. As such, they established certain common basic principles of liability for nuclear damages: (i) operators of nuclear power plants should be exclusively liable for nuclear damages, (ii) they should be strictly liable for nuclear damages, (iii) their liability should be limited in amount, (iv) their liability must be financially secured, for example through insurance, and (v) their liability should be limited in time. The earliest example of this was

5 Schwartz, supra note 2, at 39.
6 Id.
7 Id.
8 Schwartz, supra note 2, at 39–41.

https://scholarship.law.upenn.edu/alr/vol12/iss2/6
the 1957 Price-Anderson Act in the United States.\textsuperscript{9} Japan passed its Act on Compensation for Nuclear Damage in 1963.\textsuperscript{10} These two pieces of legislation have similarities, but differ in several important respects which will be discussed in detail later in this paper.

From these early days of the development of nuclear power some nations, in particular the densely populated nations of Western Europe with many neighboring states, have desired to address the potential mess of conflicting laws that would govern a nuclear accident that caused transnational damages by entering into international agreements that delineate which state’s law will apply to an accident as the rules on conflicts of laws differ between states.\textsuperscript{11} The core features of such agreements are that they (i) provide that the law governing liability for nuclear damages is the law of the state in which the nuclear accident occurred, (ii) provide for exclusive jurisdiction over claims regarding liability for such accident in the courts of the state in which the accident occurred, and (iii) require that parties to the agreement bring their domestic law into conformance with principles mentioned above, though the precise requirements vary in important respects.\textsuperscript{12} Also, some international agreements only cover nuclear damage suffered in states party to the agreement in question.\textsuperscript{13}

The first such agreement was the Paris Convention, open only to OECD members or other states as allowed by a vote of the members of the OECD, which was signed in 1960 and took effect in 1968.\textsuperscript{14} Membership of the Paris Convention focuses in Europe.\textsuperscript{15} It

\begin{footnotes}
\item[11] Schwartz, supra note 2, at 41.
\item[12] Id. at 43.
\item[13] Id.
\end{footnotes}
was followed shortly thereafter by the Vienna Convention, an agreement open to any state, which was signed in 1963 and took effect in 1977. The Vienna Convention membership concentrates in Latin America and the Middle East. The Paris Convention was also strengthened by the Brussels Supplementary Convention, which created the first framework for a supplementary compensation fund consisting of contributions from state parties in the event of nuclear damage in excess of the minimum amount of liability an operator would be subject to under the Paris Convention. However, the United States was unable to join either Convention without significant amendments to U.S. law because of several differences between U.S. law and the requirements for entry to the two Conventions.

These agreements are still the bedrock of the international regime for the compensation for transnational nuclear damages and a brief review of their core terms is necessary in understanding the role of the CSC. Both treaties are only applicable only within the territory of the contracting parties. Jurisdiction over claims arising under the Conventions lies only with the courts of the contracting party in which the nuclear incident occurred. Judgments entered by the competent court generally must be recognized and enforced by all

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21 Paris Convention, supra note 14, art. 2; Vienna Convention, supra note 16, art. 11.

22 Paris Convention, supra note 14, art. 13(a); Vienna Convention, supra note 16, art. 11.
contracting parties.\textsuperscript{23} The Convention and national law must be applied without discrimination based on nationality, domicile or residence.\textsuperscript{24} The Conventions define operator liability for nuclear damages as being for damage to or loss of life of any person and damage to or loss of property which is caused by a nuclear incident, except the operator’s property at the site of the nuclear installation.\textsuperscript{25} Both Conventions provide for the strict and exclusive of liability of nuclear operators for nuclear damages where causation can be proved, with exceptions only for damage caused by nuclear incidents relating to acts of war or insurrection or, unless national legislation of the installation states otherwise, a grave natural disaster of an exceptional character.\textsuperscript{26} The Paris Convention provides that states may limit liability to not less than 5 million Special Drawing Rights (SDR) with the International Monetary Fund (IMF) but not more than 15 million SDR, and the Vienna Convention provides that states may limit liability to not less than U.S. $5 million.\textsuperscript{27} Financial security must be provided by the nuclear operator in such amount.\textsuperscript{28} The statute of limitations on claims for compensation is generally 10 years from the date of the incident, unless national law of a contracting party provides for insurance coverage for a longer period.\textsuperscript{29} The law of the competent court may provide for a statute of limitations of not less than three years from the date the victim had or should have had knowledge of the damage and the identity of the operator liable for the damage under the Paris Convention, and not less than two years

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\textsuperscript{23} Paris Convention, \textit{supra} note 14, art. 13(d); Vienna Convention, \textit{supra} note 16, art. 12.

\textsuperscript{24} Paris Convention, \textit{supra} note 14, art. 14(a); Vienna Convention, \textit{supra} note 16, art. 13.

\textsuperscript{25} Paris Convention, \textit{supra} note 14, arts. 1, 4; Vienna Convention, \textit{supra} note 16, arts. 1(j), 2.

\textsuperscript{26} Paris Convention, \textit{supra} note 14, art. 4; Vienna Convention, \textit{supra} note 16, art 2.


\textsuperscript{28} Paris Convention, \textit{supra} note 14, arts. 10(a), 15; Vienna Convention, \textit{supra} note 16, art. 7.

\textsuperscript{29} Paris Convention, \textit{supra} note 14, art. 8(a); Vienna Convention, \textit{supra} note 16, art. 6.
under the Vienna Convention. Nuclear operators have a right of recourse against third parties only where explicitly provided for by written agreement or where the accident was caused by the intentional act of an individual.

The Brussels Supplementary Convention, which limits membership to states also party to the Paris Convention, provides for two additional tiers of government funds for compensation beyond the first tier of compensation required in the Paris Convention in the event of an accident. The second tier is composed of public funds provided by the installation state in which an accident occurred in the amount of the difference between 175 million SDR and the minimum liability amount established by the installation state. The third tier is a fund of 125 million SDR provided by all contracting parties according to a pre-determined formula.

Chernobyl brought home the need for such agreements. The 1986 Chernobyl accident caused massive transnational nuclear damages, but it took place in the USSR, which was not party to any international agreement, had no special legislation on nuclear damages, and asserted it had no duty to provide compensation under international law. While damages from Chernobyl were incurred as far away as the United States and Japan, the European states suffered the most damage and in the aftermath of the accident they moved to both expand the number of states party to international agreements and to make it easier for victims to recover for nuclear damages under the existing agreements.

One of the first measures was the ratification of the 1988 Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention, which grants coverage to a state party to it under the convention to which it is not already a party (either the Paris or Vienna Convention) and ensures that only one of either the Paris Convention or Vienna Convention will apply to a nuclear incident.

30 Paris Convention, supra note 14, art. 8(c); Vienna Convention, supra note 16, art. 6(c).
31 Paris Convention, supra note 14, art. 6(f); Vienna Convention, supra note 16, art. 10.
32 Brussels Supplementary Convention, supra note 18, art. 3(a).
33 Brussels Supplementary Convention, supra note 18, art. 3(b).
34 Brussels Supplementary Convention, supra note 18, art. 3(b).
35 Schwartz, supra note 2, at 37–38.
36 Id. at 43–44.
Subsequently, proposals would be made to amend the Paris Convention, Vienna Convention, and Brussels Supplementary Convention in response to criticism that limits on liability under existing agreements were too low, that an additional compensation fund was necessary to cover damages in excess of operator liability, that existing statutes of limitations were too short, that additional types of damages must be covered, and that territorial scope should be widened.38

Also, the United States was interested in joining an international regime covering liability for transnational nuclear damage but was unable to join either the Paris or Vienna Convention as U.S. law channels operator liability differently than the Conventions do and U.S. limits on liability are considerably higher than in either Convention.39 In the opinion of the Department of Energy, joining the CSC was meant to address concerns about ensuring compensation for nuclear accidents that occurred outside the United States and also promote commercial opportunities for U.S. firms to assist in the development of the safe use of nuclear power in developing states by providing them with the same rules channeling liability as firms from competing European states and Russia which were parties to the Paris and Vienna Conventions.40 Other states recognized that there would need to be a grandfather clause allowing the United States to join the CSC, a major goal if the agreement were to have global acceptance since the United States is the largest user


40 Id.
of nuclear power. 41 This was uncontroversial and the United States would play a critical role in the negotiations, preparing what would be the basis for the ultimate text of the CSC. 42

Despite a general consensus about the need for a more globally accepted regime with stronger victim protection provisions, amending the Conventions was a messy and drawn out process due to the conflicting interests of the parties. As the Paris Convention was not designed to be open to non-OECD members, the IAEA-affiliated Vienna Convention was addressed first, with the CSC, also developed under the aegis of the IAEA, being negotiated simultaneously and with the intent that it both complement the Vienna Convention in the manner the Brussels Supplementary Convention complements the Paris Convention and act as a more broadly applicable third treaty regime. 43 The terms of the agreements are designed to be as similar as possible to promote the adoption of both. Negotiations began on these two agreements in 1990. 44

The Explanatory Texts to the Revised Vienna Convention and the CSC point out several areas of conflict during negotiations. The parties were not in agreement on the new, expanded definition of damages, largely as a result of different treatments in national law of economic losses and environmental damages. 45 Also, while there was general agreement that the limits on compensation should be increased in the Vienna Convention and CSC, the amount the limits should be increased was so controversial it was left until the final stage of negotiations and eventually phase-in periods with reduced minimum liability amounts were adopted. 46 Furthermore, one group of countries wanted to expand the geographical scope of coverage of damage to damage wherever suffered, not just the territory of the parties to the Convention, but this was controversial as it was seen to reduce the amount of compensation available for victims in the parties to the Convention, though it is also precisely the problem that

42 Id. at 65.
43 Schwartz, supra note 2, at 46.
44 Vienna Convention/CSC Explanatory Texts, supra note 41, at 34.
45 Id. at 34.
46 Id. at 43, 77.
arose in the Chernobyl accident.\footnote{Id. at 29.} Lastly, the terms of the supplementary compensation fund in the CSC were the most heavily debated provision.\footnote{Id. at 19, 63.} Originally the idea of a supplementary tier of compensation to which all parties would be required to contribute was rejected in the 1963 Vienna Convention because it was thought that such a provision would not be widely accepted since the primary beneficiaries of the fund would be victims in the state in which an accident took place.\footnote{Id. at 63.} Nuclear states, in particular the U.K. and France, objected to the reservation of funds in the supplementary fund for transnational damages because it violated the principle of non-discrimination in the distribution of damages and was perceived as being unconstitutional in some states.\footnote{Id.} Furthermore, non-nuclear states, namely New Zealand, objected to being required to make contributions to the supplementary fund as any nuclear accident could not be their fault.\footnote{Id. at 79.}

A protocol to amend the Vienna Convention and the draft of the CSC were agreed in 1997.\footnote{Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage, Sept. 29, 1997, 2241 U.N.T.S. 302 (entered into force Oct. 4, 2003), https://www.iaea.org/sites/default/files/infcirc566.pdf [hereinafter 1997 Revised Vienna Protocol].} The Vienna Convention was the first of the original Conventions for which an amendment was proposed, and is the only one for which the amendment has taken effect.\footnote{Vienna Convention Latest Status, supra note 17; Latest Status of the Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage, INT’L ATOMIC ENERGY AGENCY [IAEA] (Nov. 26, 2015), https://www.iaea.org/Publications/Documents/Conventions/protamend_status.pdf [hereinafter Revised Vienna Convention Latest Status].} The minimum liability amount for nuclear operators was increased from U.S. $ 5 million to 300 million SDR.\footnote{1997 Revised Vienna Protocol, supra note 52, art. 7.} The statute of limitations for compensation claims for loss of life or personal injury was extended to 30 years and priority is given to such claims in the distribution of compensation where claims are brought within 10 years.\footnote{1997 Revised Vienna Protocol, supra note 52, art. 8.} The scope of compensable damages was expanded to cover a variety of additional environmental and economic damages, using the same...
definition as the CSC (detailed below).\textsuperscript{56} The territorial scope of the Vienna Convention was extended to nuclear damage wherever suffered, though contracting parties may exclude damage suffered in non-contracting parties and their territorial waters by national legislation if such non-contracting party does not provide equivalent reciprocal benefits.\textsuperscript{57} Also, the exception to liability for grave natural disasters was removed.\textsuperscript{58}

As discussed above, the CSC is designed to both be a third nuclear damage liability regime open to states not party to either the Paris or Vienna Conventions as long as their national law met basic criteria and also serve as the equivalent of the Brussels Supplementary Convention for the parties of the Vienna Convention.\textsuperscript{59} The CSC provides for a minimum national compensation amount of at least 300 million SDR and a supplementary compensation fund of about 300 million SDR contributed by the parties to the CSC which is to be drawn on by the installation state in which an accident occurred to compensate victims of a nuclear incident in the event that the first tier funds are exhausted.\textsuperscript{60} Contributions to the supplementary fund are based about 90% on the nuclear power generating capacity of each party with the remainder based on the UN assessment of each party.\textsuperscript{61}

The CSC defines nuclear damages to include (a) loss of life or personal injury, (b) loss of or damage to property.\textsuperscript{62} The following are also included to the extent determined by the law of the competent court: (i) economic loss arising from the above (a) or (b), (ii) environmental reinstatement costs that are actually incurred or will be incurred, (iii) loss of income incurred as a result of a significant impairment of the environment, (iv) preventative measures, and (v)

\textsuperscript{56} 1997 Revised Vienna Protocol, \textit{supra} note 52, art. 2. This definition is the same as that used in the CSC and will be discussed in further detail in the analysis of the provisions of the CSC.

\textsuperscript{57} 1997 Revised Vienna Protocol, \textit{supra} note 52, art. 3.

\textsuperscript{58} 1997 Revised Vienna Protocol, \textit{supra} note 52, art. 6.


\textsuperscript{60} CSC, \textit{supra} note 1, arts. 3, 4.

\textsuperscript{61} CSC, \textit{supra} note 1, art. 4(1)(a).

\textsuperscript{62} CSC, \textit{supra} note 1, art. 1(f)(i–ii).
any other economic loss permitted by the law of civil liability of the competent court. 63

Exclusive jurisdiction over claims brought under the CSC generally belongs to the courts of the party within whose territory or waters the incident occurs, with certain narrow exceptions. 64 Compensation must be distributed equitably without discrimination on the basis of nationality, domicile or residence, though states may exclude nuclear damage suffered in a non-Contracting State subject to the limitations of other Conventions. 65 Regarding compensation from the international supplementary compensation fund, compensation will only be provided for damage suffered in the territory of a party or other area with one of several possible sufficient connections to that state, such as its EEZ. 66 50% of the compensation provided through the international supplementary compensation fund is prioritized for damage suffered outside of the territory of the installation state unless the state provides for not less than 600 million SDR of compensation under national law. 67

Parties to the CSC which are not also parties to either the Paris Convention or Vienna Convention must have national law consistent with the following principles, which are based on the Paris and Vienna Conventions. 68 Liability for nuclear damage must be strictly and exclusively concentrated on the operator of the nuclear reactor which caused nuclear damage. 69 There are exceptions to operator liability for nuclear damage directly due to an act of war or insurrection or, except where the law of the installation state provides otherwise, directly due to a grave natural disaster of an exceptional character. 70 Operator liability may be limited to as little as 300 million SDR and operators must maintain financial security in such amount. 71 If a state does not limit operator liability, then the amount of financial security may not be less than 300 million SDR. 72 The period of extinction for claims under the CSC is generally 10 years,

63 CSC, supra note 1, art. 1(f)(iii–vii).
64 CSC, supra note 1, art. 13(1).
65 CSC, supra note 1, art. 3(2)(a)
66 CSC, supra note 1, art. 5.
67 CSC, supra note 1, art. 11.
68 CSC, supra note 1, art. 2(1).
69 CSC, supra note 1, Annex art. 3.
70 CSC, supra note 1, Annex art. 3(5).
71 CSC, supra note 1, Annex art. 4–5.
72 CSC, supra note 1, Annex art. 5.
however if under national law the liability of the operator is covered by insurance or other financial security or by State funds for a period longer than ten years this period may be extended up to the period for which the operator’s liability is covered. 73 The law of the competent court may establish a period of prescription or extinction of not less than three years from the date a person suffering nuclear damage had knowledge of the damage and the operator liable for the damage. 74 The right of recourse of the operator against a third party is limited to cases where this is expressly provided for by written agreement or intentional acts or omissions by an individual. 75

In 2004 the parties to the Paris Convention and the Brussels Supplementary Convention agreed on protocols to amend both Conventions. 76 These Protocols met with a decidedly unenthusiastic response and have not been ratified, but their proposed amendments are of value in analyzing the CSC as they provide for more compensation, but make it available to fewer victims and for fewer types of damages. 77 The minimum liability amount in the Paris Convention was raised, generally, to € 700 million from the previous maximum of 15 million SDR, and the exception to liability for grave natural disasters of an exceptional character was removed. 78 The territorial scope of the Paris Convention was extended to include nuclear damage wherever suffered, though contracting parties may exclude with national legislation damage suffered in non-contracting parties if such non-contracting party does not provide equivalent reciprocal benefits. 79 The Protocol added a definition of damages that is largely the same as that of the 1997 Revised Vienna Protocol, though it can be read to be somewhat more restrictive of economic loss. 80 The statute of limitations on compensation claims for loss of

73 CSC, supra note 1, Annex art. 9(1).
74 CSC, supra note 1, Annex art. 9(3).
75 CSC, supra note 1, Annex art. 10.
76 2004 Protocol to Amend Paris Convention, supra note 38; 2004 Protocol to Amend Brussels Supplementary Convention, supra note 38.
78 2004 Protocol to Amend Paris Convention, supra note 38, art. 1(H, J).
79 2004 Protocol to Amend Paris Convention, supra note 38, art. 1(C).
80 2004 Protocol to Amend Paris Convention, supra note 38, art. 1(B); Schwartz, supra note 2, at 54–55.
life or personal injury was extended to 30 years.\textsuperscript{81} The Protocol to Amend the Brussels Supplementary Convention increased the second tier of damages (provided by the installation state) from 175 million SDR to € 500 million, and the third tier (provided by all contracting parties) from 125 million SDR to € 300 million. \textsuperscript{82} Unlike the Protocol to Amend the Paris Convention, in the Protocol to Amend the Brussels Supplementary Convention the territorial scope of damages covered is expanded only to cover the exclusive economic zone and continental shelf of contracting parties, not damages wherever suffered. \textsuperscript{83} This is because the compensation provided in the second and third tiers is provided by public funds and the parties didn’t want to make it so widely available. \textsuperscript{84}

Of the Revised Paris and Vienna Conventions, only the Revised Vienna Convention was actually ratified, and only by 13 parties as compared to the 40 parties of the original Vienna Convention. \textsuperscript{85} The reaction to the CSC was likewise less than enthusiastic. Only 13 states signed the CSC shortly after its publication, and only Argentina, Morocco, and Romania actually ratified the CSC shortly after signing it. \textsuperscript{86} Many signatories never ratified it, or took many years to ratify it, like the United States. \textsuperscript{87} This meant that initially the CSC could not take effect, as it required ratification by at least five states with a combined 400,000 megawatts (MW) of installed nuclear power generating capacity. \textsuperscript{88}

While the United States played a key role in the drafting of the CSC, it took until 2008 for the CSC to be ratified by the United States. \textsuperscript{89} Part of the initial delay was because the CSC requires membership in the Convention on Nuclear Safety, which the United States was not a party to at the time the CSC opened for signature,
but ratified in 1999.\footnote{CSC, supra note 1, art. 18; Latest Status of the Convention on Nuclear Safety, Int’l Atomic Energy Agency [IAEA] (Apr. 23, 2015), https://www.iaea.org/Publications/Documents/Conventions/nuclearsafety_status.pdf [https://perma.cc/C3CU-WNEM].} The CSC was eventually presented by President Bush to the Senate for ratification in 2002.\footnote{Senate Consideration of Treaty Document 107-21, U.S. CONG., https://www.congress.gov/treaty-document/107th-congress/21 [https://perma.cc/E3NG-P7AS] (last visited Jan. 15, 2017).} Committee hearings began in 2005 and the CSC received the advice and consent of the Senate in 2006.\footnote{Id.} The Senate noted that the CSC would ensure “prompt and adequate compensation” to victims of nuclear disasters and address the civil liability faced by U.S. exporters of nuclear technology.\footnote{Id. at 2.} In ratifying the CSC, the United States emphasized that the CSC was consistent with the Price-Anderson Act and it balanced victim compensation with industry liability risks.\footnote{Id.} Of particular importance was the fact the CSC had the potential for global acceptance.\footnote{Id.}

However the CSC was caught up in the process of amending energy law more generally, with a piece of omnibus legislation that included the implementing legislation for the CSC being hotly debated by both Houses of Congress and the Bush Administration, in particular over provisions relating to climate change and oil industry subsidies.\footnote{Fred Sissine, Cong. Research Serv., RL34294, Energy Independence and Security Act of 2007: A Summary of Major Provisions 1–2 (2007).} The result of this was that the Senate passed implementing legislation for the CSC several times, but the House of Representatives rejected these bills until it passed an omnibus energy bill called the Energy Independence and Security Act in 2007.\footnote{Nuclear Regulation Committee, Report of the Nuclear Regulation Committee, 29 Energy L. J. 789 (2008).}

Debate over the CSC in the United States was framed in the context of a push by the Bush Administration to expand the use of nuclear power in the United States and abroad as a clean power source.\footnote{Solution to Greenhouse Gases Is New Nuclear Plants, Bush Says, N.Y. TIMES (May 25, 2006), http://www.nytimes.com/2006/05/25/washington/25bush.html [https://perma.cc/7Q6M-JJK6].} U.S. construction of nuclear power plants slowed dramatically after the 1970s as no new plants were ordered between 1973 and 2012, though the NRC now has 12 applications for licenses

to operate nuclear power plants.\textsuperscript{99} The nuclear industry has also become much more globalized, with operator and supplier networks for U.S. nuclear plants no longer controlled by U.S. firms, with substantial cooperation between U.S. and Japanese firms.\textsuperscript{100} However, the level of U.S. exports of nuclear plant components, equipment, fuel, and technology had held steady since the mid-1990s, but U.S. market share has fallen significantly.\textsuperscript{101} Nevertheless, the 21\textsuperscript{st} Century has seen a rise in countries both large and small express interest in developing nuclear power plants.\textsuperscript{102} U.S. nuclear supplier Westinghouse had plans for 14 new nuclear reactors in China alone in the early 2000s and China had proposals for up to 80 more.\textsuperscript{103} In addition, India had plans for 12 plants.\textsuperscript{104}

Japan did not sign the CSC in 1997.\textsuperscript{105} Initially, Japan considered the CSC unattractive because Japanese law was seen as providing a higher level of protection of victims, the Japanese government did not consider it likely that Japan would be involved in a nuclear accident with transnational effects, and none of Japan’s neighbors were party to any of the Conventions.\textsuperscript{106}

Japan’s interest in the CSC reemerged in the aftermath of the 2011 Great East Japan Earthquake, culminating in Japan’s ratification of the CSC in 2015.\textsuperscript{107} With Japan’s ratification, the parties that had ratified the CSC collectively possessed over 400,000 MW of installed nuclear capacity and the CSC took effect in April 2015.\textsuperscript{108} According to a report produced by the House of Councilors, Japan’s change in position was due to a revaluation of the risks of nuclear power and renewed interest in providing legal predictability for the nuclear industry.\textsuperscript{109} This report also emphasized that ratifying the CSC

\begin{itemize}
\item \textsuperscript{99} PAUL K. KERR, CONG. RESEARCH SERV., MARY BETH K. NIKITIN & MARK HOLT, R41910, NUCLEAR ENERGY COOPERATION WITH FOREIGN COUNTRIES: ISSUES FOR CONGRESS 7–8 (2014).
\item \textsuperscript{100} \textit{Id. at 8.}
\item \textsuperscript{101} \textit{Id. at 6.}
\item \textsuperscript{102} \textit{Id. at 3.}
\item \textsuperscript{103} \textit{Id. at 20.}
\item \textsuperscript{104} \textit{Id.}
\item \textsuperscript{105} CSC Latest Status, \textit{supra} note 1.
\item \textsuperscript{106} House of Councilors Report, \textit{supra} note 3, at 52–53.
\item \textsuperscript{107} \textit{Id.}
\item \textsuperscript{109} House of Councilors Report, \textit{supra} note 3, at 52–53.
\end{itemize}
would make it easier for the United States to provide assistance in the clean-up efforts at the Fukushima Daiichi reactor by assuaging the concerns about liability of U.S. firms. The report also put particular emphasis on a belief that the modest terms of the CSC would help promote its adoption by the developing states of Asia that were endeavoring to launch a nuclear power industry. Indeed the IAEA notes that 60 countries are considering constructing nuclear power plants, and the IAEA forecasts that 10 to 24 countries will bring plants online by 2030. The Ministry of Foreign Affairs (MOFA) phrased Japan’s reasons for adopting slightly differently. The Ministry of Foreign Affairs (MOFA) advocated joining the CSC because it would enable a contribution to building an international compensation system for nuclear damages, improve compensation in the event of a nuclear accident, ensure swift and fair aid to victims, and improve in legal predictability by enacting international rules and improve the environment for related industries. MOFA has also emphasized the fact that the CSC is more compatible with the ACND, for example as regards definitions of damages and exceptions to liability, and that membership in the Paris and Vienna Conventions was concentrated in regions nowhere near Japan. Prof. Takashima suggests several additional reasons for Japan’s shift in position: the nuclear renaissance in Asia, the restructuring in the nuclear industry through acquisitions and collaboration in which Japanese industry has taken part, and the fact that the United States, with which the Japanese nuclear industry has close ties, joined the CSC system and was attempting to bring it into effect. There was also supposition

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110 Id.
111 Id.
114 Id.
115 Id.

Given the numerous, fundamental disagreements on the terms of the Revised Vienna Convention and the CSC even between the negotiating parties, it is unsurprising that ratification has not proceeded smoothly. Nevertheless, the difficulty in gathering significant membership in any single treaty regime limits the utility of all of the treaties, including the CSC.\footnote{Schwartz, supra note 2, at 50–51.} As mentioned previously, states have long looked for a mechanism to clarify what law will apply when there are transnational damages from a nuclear accident and to ensure that their citizens obtain compensation for those damages.\footnote{Id. at 41.} If there are insufficient parties to the Conventions then these objectives cannot be achieved, as was realized after the Chernobyl accident.\footnote{Id. at 43–44.} Indeed with membership fragmented between multiple conventions this problem largely remains.

At present the membership in the Conventions is as follows. There are nine parties to the CSC, sixteen parties to the Paris Convention, and forty parties to the Vienna Convention (only 13 ratified the Revised Vienna Convention).\footnote{CSC Latest Status, supra note 1; Paris Convention Latest Status, supra note 15; Vienna Convention Latest Status, supra note 17.} However the United States (99 reactors), Japan (43 reactors, many inactive pending approval), and India (22 reactors), all with substantial nuclear power industries, are party to the CSC.\footnote{CSC Latest Status, supra note 1; Operational Reactors by Country, INT’L ATOMIC ENERGY AGENCY [IAEA] (Feb. 14, 2016), https://www.iaea.org/PRIS/WorldStatistics/OperationalReactorsByCountry.aspx [https://perma.cc/ENE3-AME8].} In total the parties to the CSC operate 169 reactors, the parties to the Paris Convention 116 reactors, and the parties to the Vienna Convention 76 reactors.\footnote{Operational Reactors by Country, INT’L ATOMIC ENERGY AGENCY [IAEA] (Feb. 14, 2016), https://www.iaea.org/PRIS/WorldStatistics/OperationalReactorsByCountry.aspx [https://perma.cc/ENE3-AME8].} Of the major nuclear powers, Canada, China (including Taiwan), South Korea, and...
Switzerland are not party to any Convention, and they collectively operate 92 reactors.  

It is therefore important to examine the reasons why membership in the Conventions has not grown. One reason for failure of nuclear power generating countries to join the CSC was preferential treatment of plaintiffs from outside a state’s borders in distributions from the supplementary compensation fund. This was one of the matters of dispute during the negotiation process. In addition, nuclear states objected to reserving half of the supplementary fund for transnational damages which may have occurred in states not party to the CSC. The drafting process also revealed disagreement on the proper scope of compensable damages. There also was disagreement over whether to cover damages wherever suffered, as the Vienna Convention does, or only in the parties to the Convention, as the CSC does. Furthermore, the parties to the Brussels Supplementary Convention, including France and the U.K., felt it would be too complex and duplicative to be part of both systems considering the different provisions of the agreements. Russian representatives have voiced concern that the presence of the CSC as a third legal regime to excessively fragment the legal framework. Furthermore, the increased minimum liability amounts have encountered stiff resistance among the European states, and they were not even able to get sufficient ratification of the amended Paris Convention. For non-nuclear states, such as Austria and New Zealand, the provisions concentrating liability on nuclear operators and relieving suppliers of liability have precluded their ratification of any international agreement on this subject as they see such provisions as being overly protective of the nuclear industry.

124 Schwartz, supra note 2, at 57.
125 Id. at 52.
126 Vienna Convention/CSC Explanatory Texts, supra note 41, at 63.
127 Id.
128 Id. at 34.
129 Id. at 29.
130 Schwartz, supra note 2, at 52.
132 Schwartz, supra note 2, at 43, 77.
133 Id. at 59.
from nuclear power. Germany has decided to phase out nuclear power.\footnote{Goodbye Nuclear Power: Germany’s Renewable Energy Revolution, GUARDIAN (May 10, 2013), http://www.theguardian.com/sustainable-business/nuclear-power-germany-renewable-energy [https://perma.cc/G47D-XE63].}\footnote{Itay Says No, WORLD NUCLEAR NEWS (June 14, 2011), http://www.world-nuclear-news.org/NP_Italy_says_no_1406111.html [https://perma.cc/M6DJ-3H4T].} Italian voters rejected a bid by the government to revive nuclear power generation after a moratorium on new plants was put in place in the 1980s.\footnote{CSC Latest Status, supra note 1; Revised Vienna Convention Latest Status, supra note 77.}

However there has been a new wave of interest in the modern agreements on the part of states interested in building a domestic nuclear power industry, with 4 states (including Japan) ratifying the CSC and 8 states ratifying the Revised Vienna Convention since 2010.\footnote{KERR, NIKITIN & HOLT, supra note 99, at 20.} Many U.S. companies will only agree to export to parties to the CSC.\footnote{Revised Vienna Convention Latest Status, supra note 1.} The U.A.E., for example, acceded to the Revised Vienna Convention in 2012,\footnote{UAE Signs International Nuclear Liability Pact, WORLD NUCLEAR INSTITUTE (July 10, 2014), http://www.nei.org/News-Media/News/News-Archives/UAE-Signs-International-Nuclear-Liability-Pact [https://perma.cc/2TRL-8F8S].} and the CSC in 2014,\footnote{India’s Nuclear Ambitions Boosted with Global Liability Pact, BLOOMBERG NEWS (Feb. 4, 2016), http://www.bloomberg.com/news/articles/2016-02-05/india-s-nuclear-ambitions-boosted-by-joining-liability-pact [https://perma.cc/TJS8-MATZ].} after signing a contract for four nuclear reactors, notably with a South Korean firm not a U.S. firm, highlighting the role of the CSC as a part of the U.A.E’s commitment to the safe development of nuclear power.\footnote{Id.; Kerr, Nikitin & Holt, supra note 99, at 20.}

In addition, India, keen to expand its use of nuclear power to meet its surging electricity demand, ratified the CSC in February 2016.\footnote{CSC Latest Status, supra note 1; Revised Vienna Convention Latest Status, supra note 77.} Negotiations had gone on for over 10 years with U.S. firms balking at Indian law which held suppliers liable for damages due to manufacturing defects and refusing to export to India unless India ratified the CSC. While membership in the Conventions is expanding somewhat, it is still far from the ideal of a global regime imagined in the aftermath of the Chernobyl accident.
III. U.S. NUCLEAR DAMAGE COMPENSATION SYSTEM

Before analyzing how well the CSC accomplishes its twin goals of promoting victim compensation and shielding operators from unbearable liability for accidents, a background in U.S. and Japanese law on the compensation of nuclear damage is necessary as these are the two main population centers in the CSC when it took effect. In the United States, liability for nuclear damage is governed by the 1957 Price-Anderson Act (1957), which has been amended about every ten years since its passage and undergone significant changes since its passage.143

The Price-Anderson Act defines the liability of anyone liable for “public liability,” which is defined as “any legal liability arising out of or resulting from a nuclear incident or precautionary evacuation.”144 This definition means that, in addition to the nuclear operator, other parties, such as suppliers, are still liable for nuclear damage, but the liability is channeled to the operator because these other parties are indemnified by the nuclear operator under his insurance coverage.145 This is termed economic channeling, in contrast to the international standard of legal channeling discussed previously, in which the nuclear operator is deemed solely liable for all damages and nuclear damage is removed by statute from normal tort law.146

Under the Price-Anderson Act, unless there is an “extraordinary nuclear occurrence” (ENO), nuclear operators are subject to the ordinary standards of liability.147 Unless the Nuclear Regulatory Commission (NRC) determines that there was an ENO, plaintiffs generally need to show that the damage caused to them was due to negligence or some other wrongful act unless state law

145 Faure & Borre, supra note 143, at 242.
146 Id.
provides otherwise. The NRC has issued regulations defining an ENO based on criteria regarding radiation dose received, contamination levels for certain isotopes, and monetary damages.

The Price-Anderson Act allows the NRC to issue regulations requiring nuclear operators to waive certain tort law defenses to liability, de facto imposing strict liability. The NRC has issued regulations which apply this provision through the contractual terms of the indemnity agreements which nuclear operators are required to conclude with the NRC. The indemnity agreement requires licensees to waive:

1. Any issue or defense as to the conduct of the claimant or the fault of the insureds, including but not limited to:
   - (i) Negligence,
   - (ii) Contributory negligence,
   - (iii) Assumption of risk, and
   - (iv) Unforeseeable intervening causes, whether involving the conduct of a third person, or an act of God,

2. Any issue or defense as to charitable or governmental immunity, and

3. Any issue or defense based on any statute of limitations if suit is instituted within three (3) years from the date on which the claimant first knew, or reasonably could have known, of his bodily injury or property damage and the cause thereof, but in no event

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149 10 C.F.R. §§ 140.84, 140.85 (2002).
150 42 U.S.C. § 2014 (n). See also Faure & Borre, supra note 143, at 241–42.
151 10 C.F.R. 140.91 (2016).
more than twenty (20) years after the date of the nuclear incident.\textsuperscript{152}

If the NRC does not declare an accident to be an ENO then claims are brought as normal under state law. The NRC did not declare the Three Mile Island accident to have been an ENO and claimants needed to prove a breach of duty, but subsequently most states have imposed strict liability by statute.\textsuperscript{153}

The Price-Anderson Act requires nuclear operators to “have and maintain financial protection of such type and in such amounts” as the NRC requires, currently $375 million for reactors licensed to produce 100,000 kilowatts or more.\textsuperscript{154} Nuclear operators are also required to maintain secondary financial protection in the form of an industry retrospective rating plan in the event public liability from a single accident exceeds the primary coverage of the operator involved.\textsuperscript{155} The amount of this secondary coverage is a maximum of $95 million dollars per accident (adjusted for inflation), plus an additional 5% to cover legal costs.\textsuperscript{156} The maximum amount of retroactive premium that can be assessed for a single accident is currently $121.255 million.\textsuperscript{157} At present there are 104 reactors in the pool, so there is the potential for a pool of about $12.61 billion per incident, which combined with the insurance policy of the operator creates a total pool of $12.985 billion.\textsuperscript{158} However, no operator will be required to pay more than an inflation adjusted $15 million per year (currently $18.963 million).\textsuperscript{159} If the amount of claims in a given year exceeds the pool of funds available to pay such claims, the NRC will obtain funds from Congress or the Treasury to advance the amount of payable claims and later recover the amounts from the nuclear operators.\textsuperscript{160}

\textsuperscript{152} Id.
\textsuperscript{153} Lerner & Tanzman, supra note 148, at 562–63.
\textsuperscript{155} 42 U.S.C. § 2210(b)(1).
\textsuperscript{156} 42 U.S.C. §§ 2210(b)(1), (o)(1)(E).
\textsuperscript{157} 10 C.F.R. 140.11(a)(4).
\textsuperscript{159} 42 U.S.C. § 2210(b)(1); 10 C.F.R. 140.11(a)(4).
\textsuperscript{160} 42 U.S.C. § 2210(b)(4).
If damages from a single accident exceed the two tiers of coverage then Congress shall review reports on the damages prepared by the Secretary of Energy or the NRC and proposals for compensation plans prepared and submitted by the President and "take whatever action is determined to be necessary (including approval of appropriate compensation plans and appropriation of funds) to provide full and prompt compensation to the public for all public liability claims resulting from a disaster of such magnitude."161 While the provisions regarding the Executive Branch are binding, any action by Congress is totally discretionary.162

The CSC was implemented with the Energy Independence and Security Act of 2007.163 No major changes were required to the Price-Anderson Act in order to implement the CSC. The first tier of compensation required under the CSC is addressed by nuclear operator private insurance. For incidents not covered by the Price-Anderson Act, U.S. suppliers of nuclear technology would be required to bear the costs of any contribution to the fund because they "stand to benefit from the adoption of harmonized liability rules under the CSC."164 Funds normally available under the Price-Anderson Act for incidents within its scope will be used to cover the costs of participating in the CSC system and nuclear suppliers will be required to cover the costs payable by the United States on account of being a party to the CSC for covered incidents outside the United States that are not within the scope of the Price-Anderson Act.165 Funds made available to the United States under the CSC will be "used to satisfy public liability resulting from the Price-Anderson incident."166 The amount of public liability allowable will be increased by the amount of funds made available by the CSC international supplementary fund.167 Where suppliers are responsible for covering contributions to the international supplementary fund created under the CSC, the amount of the contribution will be assigned to individual suppliers based on a risk-informed assessment

161 42 U.S.C. § 2210(e), (i).
162 Lerner & Tanzman, supra note 148, at 565.
formula. The U.S. Treasury will pay the amount of contribution required for the international supplementary fund and will collect reimbursement from nuclear suppliers.

IV. JAPANESE NUCLEAR DAMAGE COMPENSATION SYSTEM

In Japan civil liability for nuclear damage is governed under the 1963 Act on Compensation for Nuclear Damage (ACND). The ACND states that its purpose is “to protect persons suffering from nuclear damage and to contribute to the sound development of the nuclear industry.” The ACND defines nuclear damage to mean “any damage caused by the effects of the fission process of nuclear fuel, or of the radiation from nuclear fuel etc., or of the toxic nature of such materials.” The compensation system established by the Act on Compensation for Nuclear Damage is the exclusive remedy for nuclear damage, and the nuclear operator is solely liable for nuclear damage. Unlike in other systems, no limit is placed on the liability of nuclear operators. Strict liability for nuclear damage is imposed on nuclear operators except where the damage is caused by a grave natural disaster of an exceptional character or by an insurrection. Where the damage is caused by a grave natural disaster of an exceptional character or by an insurrection the Government of Japan “shall take the necessary measures to relieve victims and to prevent the damage from spreading.” Nuclear operators retain a right of recourse against a third party that where the nuclear operator has provided compensation for nuclear damage caused by the willful act of that third party.

170 ACND, supra note 10.
171 ACND, supra note 10, art. 1.
172 ACND, supra note 10, art. 2, para. 2.
173 ACND, supra note 10, art. 4.
174 ACND, supra note 10, art. 4, para. 1.
176 ACND, supra note 10, art. 3, para. 1.
177 ACND, supra note 10, art. 17.
178 ACND, supra note 10, art. 5, para. 1.
As there are no provisions altering the normal law on statutes of limitations in the Act on Compensation for Nuclear Damage plaintiffs are required to bring claims within three years of knowledge of the harm and the identity of the tortfeasor, but not later than twenty years from the date of the harm. This has been extended for toxic torts, however, such that victims simply must bring their claim within the three year period of prescription described above.

A nuclear operator must provide ¥ 120 billion of financial security either (a) by maintain a private insurance policy and an indemnity agreement for compensation of certain nuclear damage with the Government of Japan, (b) by providing a deposit of that amount, or (c) by other sufficient financial security approved by the Ministry of Education, Culture, Sports, Science, and Technology (MEXT). Under the ACND the Government is required to provide such aid as is required for a nuclear operator to provide compensation for nuclear damage to the extent authorized to do so by the National Diet when the amount of compensation due for nuclear damage exceeds the financial security amount and when the Government “deems it necessary in order to attain the objectives of this Act.”

Liability insurance contracts for nuclear damage indemnify a nuclear operator for most loss arising from compensating nuclear damage. Indemnity agreements for nuclear damage are agreements in which the Government of Japan indemnifies a nuclear operator for loss arising from compensating nuclear damage not covered by the liability insurance contract or other financial security for compensation of nuclear damage, such as damages due to normal operations, volcanos and earthquakes, and damages otherwise covered by private insurance but not claimed within ten years of the nuclear accident.

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179 Minpō (民法) [Civ. C.], Law No. 89 of 1896, art. 724 (Japan); Osaka, supra note 175, at 449.
180 Saikō Saibansho [Sup. Ct.], Apr. 27, 2004, Hei 13 (uke) no. 1760, 58(4) Saikō Saibansho Minji Hanreishū [Minshū] 1032 (Japan); See also Osaka, supra note 175, at 449.
181 ACND, supra note 10, art. 7, para. 1.
182 ACND, supra note 10, art. 16.
183 ACND, supra note 10, art. 8.
In response to the multi-trillion yen damages caused by the Fukushima Daiichi incident, Japan passed the Nuclear Damage Compensation and Decommissioning Facilitation Corporation Act in 2011.\textsuperscript{185} The Act created a fund to provide aid to TEPCO, and other future nuclear operations that have liability for nuclear damage exceeding the amount of financial security required of them, so that it would be able to pay out all compensation for which it was liable rather than face liquidation due to the large amount of claims for nuclear damage.\textsuperscript{186} The shareholders of the corporation are the Government of Japan and other non-governmental persons, including nuclear operators, though nuclear operators are not required to become shareholders.\textsuperscript{187} The current shareholders of the Corporation include the Government of Japan, which invested ¥ 7 billion, and nuclear operators including TEPCO, which also invested ¥ 7 billion.\textsuperscript{188} Under the Compensation Corporation Act nuclear operators pay annual premiums and will be able to request funds to pay compensation claims without any obligation to repay the Compensation Corporation.\textsuperscript{189} The Compensation Corporation may also provide additional assistance to nuclear operators, such as loans.\textsuperscript{190} Also, the Government is authorized to issue interest-free, non-transferable bonds to the corporation which can be redeemed to ensure availability of funds to provide financial assistance to a nuclear operator in the event of an accident that causes damages so large the Corporation does not have sufficient funds to provide aid to a nuclear operator.\textsuperscript{191} A nuclear operator receiving financial assistance in this manner will be required to pay an additional contribution on top of its normal annual contribution.\textsuperscript{192} Where a

\begin{thebibliography}{99}
\item ACND, \textit{supra} note 10, art. 16; Genshiryoku Songai Baishō Hairo Tō Shien Kikō Hō (原子力損害賠償・廃炉等支援機構法) [Nuclear Damage Compensation and Decommissioning Facilitation Corporation Act] Law No. 94 of 2011, art. 2 (Japan), http://law.e-gov.go.jp/htmldata/H23/H23HO094.html [https://perma.cc/VN87-PTKN] [hereinafter Compensation Corporation Act]; see also Osaka, \textit{supra} note 175, at 442.
\item Osaka, \textit{supra} note 175, at 442.
\item Compensation Corporation Act, \textit{supra} note 185, art. 4.
\item Compensation Corporation Act, \textit{supra} note 185, art. 38, 39, 41.
\item Compensation Corporation Act, \textit{supra} note 185, art. 41.
\item Compensation Corporation Act, \textit{supra} note 185, art. 45, 48–49.
\item Compensation Corporation Act, \textit{supra} note 185, art. 52.
\end{thebibliography}
corporation receives aid in this manner it must prepare a “special business plan” jointly with the Corporation, which includes measures for rationalization of the nuclear operator’s operations.\(^{193}\)

Two laws were passed in 2014 in order to implement changes to Japanese law required for ratification of the CSC, the Act on Assistance, etc., for the Nuclear Damage Compensation Fund pursuant to the Implementation of the Convention on Supplementary Compensation for Nuclear Damage and the Act Amending Certain Provisions of the Act on Compensation of Nuclear Damage and the Act on Indemnity Agreements for the Compensation of Nuclear Damage.\(^{194}\)

Under the CSC Assistance Act, the Government will provide financial assistance to a nuclear operator where the amount of nuclear damages suffered in the territory of a party to the CSC or suffered by a national of a party to the CSC is above 300 million SDR when jurisdiction over the claim lies with the courts of Japan.\(^{195}\) The amount of aid is the lesser of the amount of compensation payable by a nuclear operator under the CSC in excess of 300 million SDR and the amount payable by Japan as its contribution to the international supplementary compensation fund, plus interest and costs.\(^{196}\) The Government collects regular annual deposits of ¥170,400,000 from

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\(^{193}\) Compensation Corporation Act, supra note 185, art. 45.


\(^{196}\) CSC Assistance Act Cabinet Order, supra note 195, art. 2.
nuclear operators for the purpose of satisfying any obligation under the CSC to make a contribution to the international supplementary fund. The Government will also collect a special deposit from a nuclear operator equal to the amount required as a contribution to the international supplementary compensation fund by Japan.

The changes to Japanese law under the CSC Amendments Act to bring Japanese law with the Annex of the CSC were minimal as Japanese law largely was largely already in conformance. The most significant change is that after the amendment operators have a right of recourse only when nuclear damage was caused by the willful act of a natural person, not any third party as under previous law, or where there is express provision for a right of recourse in a written agreement.

V. ANALYSIS OF THE CSC’S PROVISIONS

Having previously noted how low membership in the CSC limits its utility, this section will analyze how well the provisions of the CSC accomplish their objectives of ensuring adequate victim compensation while shielding nuclear operators from unsustainable levels of potential liability, in particular regarding the largest users of nuclear power in the CSC, the United States and Japan. As described above, the CSC follows prior practice in the Paris and Vienna Conventions of applying strict and exclusive liability for nuclear operators, employing these same core mechanisms to shield the nuclear industry as a whole from liability and concentrating it on the nuclear operator. The CSC was formulated to address criticisms of the original Paris and Vienna Conventions regarding low liability limits, the lack of a supplementary compensation fund, short statutes of limitations, overly restrictive types of covered damages, and limited territorial scope. The CSC is the implementation of the need for a supplementary compensation fund. This section will examine several critiques of the CSC involving: definition of damages, limitations on liability, legal channeling, statutes of

197 CSC Assistance Act, supra note 194, art. 4; CSC Assistance Act Cabinet Order, supra note 195, art. 3.
198 CSC Assistance Act, supra note 194, art. 10, 11; CSC Assistance Act Cabinet Order, supra note 195, art. 5.
199 Currie, supra note 4, at 107.
200 Currie, supra note 4, at 107.
limitations, and jurisdiction over claims. This paper argues that the CSC will likely prove to have little impact on domestic victims in either the United States or Japan because it does not substantially increase the amount of compensation available or make compensation particularly easier to obtain. The CSC would, however, improve the availability of compensation in many nations considering nuclear power that currently heavily limit industry liability.

A. Definition of Damages

Under the original Paris and Vienna Conventions nuclear damages were restricted to loss of life, personal injury and damage to property. The Revised Vienna Convention and the CSC greatly expanded the definition of nuclear damages to include a variety of economic and environmental damages to the extent allowed by the law of the competent court as described above. Despite this expanded definition, critics of the CSC and the other Conventions attack the definition of damages for being overly restrictive, and, in the case of Japan, are concerned that ratification of the CSC will eliminate several types of damage currently included in compensable damages.

As Japanese law currently allows all damages proved to be caused by a nuclear accident, the more restrictive CSC definition does somewhat limit compensable damages. The Japan Federation of Bar Associations is specifically concerned that the CSC definition does not explicitly include emotional damages or damages from harmful rumors. While the CSC definition does not specifically include rumor damages, scholarly consensus is that both of these types of damage will still be included in cases subject to Japanese law. Japanese jurisprudence allows for the compensation of pure economic damages without any harm to person or property, such as so called rumor damages, “where the desire of a consumer or business partner to avoid [doing business with the plaintiff] out of concern for the danger of contamination by radioactive substances on account of

201 Paris Convention, supra note 14, art. 1; Vienna Convention, supra note 16, art. 1(j).
202 CSC, supra note 1, art. 1(f)(iii–vii).
203 Currie, supra note 4, at 85; August 2014 JFBA opinion, at 1.
204 ACND, supra note 10, art. 3.
205 August 2014 JFBA opinion, supra note 4, at 4.
the present accident is deemed reasonable by the standard of an average or regular person.” 206 The CSC definition of nuclear damages leaves room for claims brought under Japanese law to include rumor damages in the scope of compensable damages in under art. I(f)(vii) (“any other economic loss, other than any caused by the impairment of the environment, if permitted by the general law on civil liability of the competent court”). 207

Regarding emotional harms, the fact that the CSC includes personal injury in the definition of nuclear damage while the other conventions on the compensation of nuclear damage refer to bodily injury could be interpreted to mean that the more expansive term personal injury is intended to include both purely physical harms and emotional harms. 208

In addition, some argue that damages should be further expanded to include rumor damages even where no measurable radioactivity has been released, 209 and fully integrate economic and environmental damages regardless of the law of the competent court. 210 Others criticize the CSC definition for being too broad, saying that including pure economic damages in the scope of nuclear damages makes it harder for victims that suffered personal injury or property damage to recover the full amount of recoverable damages unless the financial resources of the nuclear operator are unlimited. 211


208 Id. at 5.


210 Currie, supra note 4, at 86.

In summary, the definition of damages of the CSC and the Revised Vienna Convention is much more protective of victims than the definition currently used in the un-amended Paris Convention, though the range of compensable damages could be further expanded, and concerns about reduced coverage in Japan are largely unfounded.

B. Limitations on Liability

Limits on liability have been put in place to prevent nuclear operators from shouldering the full cost of insuring their liabilities and inability to compensate any damages due to bankruptcy.\textsuperscript{212} These limitations on the liability of nuclear operators have a distorting effect because they allow nuclear operators to avoid fully internalizing the costs of their operations.\textsuperscript{213} Nevertheless, it is unlikely that international agreements can raise the minimum limits on the amount of compensation to a level that would ensure full compensation of the largest nuclear accidents and that this can be addressed mainly through national law. While the 1990s era Conventions with minimum liability amounts of 300 million SDR would be sufficient to cover an accident the size of the Three Mile Island accident with damages of $70 million,\textsuperscript{214} the Conventions have been roundly criticized for adopting minimum compensation amounts that are substantially lower than would be required to actually compensate a major nuclear accident like Chernobyl or Fukushima.\textsuperscript{215} The World Health Organization estimates the damages from Chernobyl will be in the range of hundreds of billions of dollars, though notes that the amount is not possible to accurately calculate.\textsuperscript{216} Damages from Fukushima have already exceeded ¥ 4 trillion.\textsuperscript{217}

\textsuperscript{212} Currie, supra note 4, at 91.

\textsuperscript{213} Faure & Borre, supra note 143, at 264.


\textsuperscript{215} Van Dyke, supra note 209, at 35 (describing the current limits on damages “grossly inadequate”); August 2014 JFBA Opinion, supra note 4, at 4–5.


\textsuperscript{217} House of Councilors Report, supra note 3, at 52.
Limitations on the monetary amount of damages and the plaintiffs who are allowed to bring claims have increased from the Paris Convention’s upper limit of $15 million to a first tier of at least 300 million SDR and a second tier of up to 300 million SDR in the CSC and Revised Vienna Convention. However, this is still considerably lower than the $12.9 billion available in the United States. Japan has an unlimited liability system, but even the primary insurance requirement of ¥ 120 billion is considerably higher than the CSC minimum amount. Above that amount compensation is addressed through direct government aid or through the Compensation Corporation in the form of payouts and loans. The Revised Paris Convention proposed to increase the minimum limit on liability to € 700 million, and combined with the Revised Brussels Supplementary Convention the total amount of available funds would have been € 1.5 billion, but there is no sign that this will be ratified at any point.

Industry groups are very much in favor of limited liability, and in Japan are pushing for a change from unlimited to limited liability, saying that industry and the public should share the risks of nuclear power and that unlimited liability will prevent full compensation of damages. However limitations on liability should only be necessary if nuclear operators are poorly capitalized and are unable to shoulder the increase in insurance costs under an unlimited liability system. Furthermore this punishes the victims of nuclear accidents not the party that caused the accident. Indeed, the trend

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218 Paris Convention, supra note 14, art. 7; Vienna Convention, supra note 16, art. 5; CSC, supra note 1, art. 3.
220 ACND, supra note 10, art. 7, para. 1.
221 ACND, supra note 10, art. 16; Compensation Corporation Act arts. 38, 39, 41, 45, 48–49
222 2004 Protocol to Amend Paris Convention, supra note 14, art. 1(H); 2004 Protocol to Amend Brussels Supplementary Convention, supra note 38, art. 3.
224 Currie, supra note 4, at 91.
225 Id.
has been for states to move away from limited liability, beginning with Germany in 1985. However at the urging of industry groups, Japan is considering moving in the opposite direction to transition from unlimited liability to either a limited liability system or imposing a statutory cap on liability above which the government will provide compensation as a reaction to the massive costs imposed by the Fukushima accident. One interesting proposal is to add a second layer of coverage based on the Price-Anderson model of retroactive premiums, but making the amount of the fund scalable up to ¥3 trillion to ¥4 trillion above which the government would be responsible for providing compensation. Critics of Japan’s current system, such as Prof. Urakawa, note that unlike other unlimited liability systems, Japan does not have clear rules on when government assistance will be provided, impeding risk management. He notes that the current system based on the Compensation Corporation creates a never ending compensation process that holds back the recovery of both victims and TEPCO and other members of the nuclear industry.

While the CSC’s minimum liability amounts are lower than those in the United States and Japan, other Asian countries at present limit liability to less than the CSC minimum amount. For example, China, which Japan has encouraged to join the CSC, only provides 800 million RMB of coverage, though additional indemnity may be provided for an extraordinary nuclear accident. Adoption of the

226 Currently Austria, Germany, Japan and Switzerland apply unlimited liability. Schwartz, supra note 2, at 59.
227 SAWA & TAKEUCHI, supra note 223, at 37.
228 SAWA & TAKEUCHI, supra note 223, at 34.
230 Id. at 160.
231 House of Councilors Report, supra note 3, at 52–53.
232 Guowuyuan (国务院) [State Council of the People’s Republic of China], Guowuyuan Guanyu Chuli Disanfang He Zeren Wenti Gei He Gongye Bu, Guojia He Anquan Ju, Guowuyuan Hedian Lingdao Xiaoazu de Pifu (国务院关于处理第三方核责同时问题给核工业部、国家核安全局、国务院核电领导小组的批复) [Reply of the Council
CSC would require increases in the amount of damages nuclear operators are liable for and would in that sense increase the amount of compensation available to potential victims.

Furthermore, the CSC provides for two exceptions to liability for nuclear operators: for nuclear damage directly due to an act of armed conflict, hostilities, civil war or insurrection and for damage directly due to a grave natural disaster of an exceptional character, except where the law of the installation state provides otherwise. This provision obstructs victim compensation for what could be the most damaging nuclear accidents to the extent the government does not provide compensation in place of the nuclear operator. In the United States, the Price-Anderson Act specifically requires nuclear operators to waive force majeure defenses to liability. Japan however grants an exception to liability for grave natural disasters of an exceptional character. However, the bar for how uncommon the disaster must is quite high, with the standard being something in the range of completely unimaginable. This rather restricts the applicability of this provision, and even the 2011 Great East Japan Earthquake was determined to not meet this standard.

Despite the disadvantages of limited liability, international agreements are not likely to be a successful method of addressing the issue. Potential state parties are simply unlikely to be willing to change their policy through international dialogue. Progress has been
seen is in the removal of the exception for grave natural disasters of an exceptional character and the CSC has a substantially greater minimum liability amount, but the Revised Vienna Convention was only ratified by 13 of the 40 Vienna Convention parties. The purpose of international agreements on liability for nuclear damages is to coordinate jurisdiction and ensure coverage of transnational damages. While in regions like Europe with many small countries closely packed together there is a greater risk of transboundary damages, victims in the United States or Japan are far more likely to be injured in purely domestic accidents. For them, limits on liability are above all a matter for domestic discussion. Furthermore, Japan has managed to provide compensation far beyond the amount of financial security required of nuclear operators through the innovative, if perhaps clunky, system of the Compensation Corporation. The effects of nuclear damages are primarily felt in relatively close proximity to the site of the accident. Pressure to ensure adequate compensation should therefore be strongest domestically.

C. Legal Channeling

Further innovations should be expected at the level of domestic law. While legal channeling is the norm internationally, it is not an efficient way of compensating victims. Legal channeling is yet another way in which the nuclear industry, in particular manufacturers, shields itself from liability and avoids economically efficient internalization of costs. While legal channeling decreases the administrative costs of concurrent lawsuits, it does not outweigh the benefits to efficiency of allowing a victim to sue all possible parties for a given harm. The economic channeling used in the United States is more efficient because it reduces administrative costs by requiring operators to include all possible third parties into the operator’s coverage while still allowing victims to choose from the full range of possible defendants. The United States long rejected joining any Convention which would have required it to abandon

240 Vienna Convention Latest Status, supra note 17.
241 Schwartz, supra note 2, at 41.
242 Faure & Borre, supra note 143, at 464.
243 Id. at 465.
244 Id.
The CSC is therefore the better option for the United States as compared to the Paris Convention or Vienna Convention, which would have required the United States to adopt economic channeling. Unfortunately, this exception to the requirement of implementing legal channeling is part of the CSC’s provisions exempting the United States from certain requirements with which national legislation must conform. This does little good for other parties to the CSC.

D. Statute of Limitations

Another criticism of the CSC is that its statute of limitations is too short for the radiological harms caused by nuclear damage and that time limits on the bringing of claims should be eliminated entirely. The CSC requires that states implement law requiring claims be brought within three years of knowledge of the harm and identity of the tortfeasor but not longer than 10 years, however if under national law the liability of the operator is covered by insurance or other financial security for a longer period, then the statute of limitations can be extended correspondingly. This is shorter than provided for under U.S. law (20 years) or Japanese law (20 years by statute, but courts have extended this as noted above). For comparison, the Revised Paris and Vienna Conventions extend their statute of limitations all the way to 30 years. While the statute of limitations in the CSC is shorter than is provided for under U.S. or Japanese law, this provision will have no effect on the United States or Japan because the financial security requirements cover longer periods.

245 1999 DOE Report, supra note 19, at 25.
246 CSC, supra note 1, Annex art. 2.
247 August 2014 JFBA opinion, supra note 4, at 5; Van Dyke, supra note 209, at 36.
248 CSC, supra note 1, Annex art. 9.
249 42 U.S.C. § 2014 (n); 10 C.F.R. 140.91; Minpō (民法) [Civ. C.], Law No. 89 of 1896, art. 724 (Japan); Saikō Saibansho [Sup. Ct.], Apr. 27, 2004, Hei 13 (uke) no. 1760, 58(4) Saikō Saibansho Minji Hanreishū [Minshū] 1032 (Japan).
250 1997 Revised Vienna Protocol, supra note 52, art. 8; 2004 Protocol to Amend Paris Convention, supra note 38, art. 1(I).
E. Jurisdiction over Claims

Another major criticism of the CSC and the other Conventions is that they provide for exclusive jurisdiction over claims in the courts of the country in which they occurred.\textsuperscript{251} Criticism of this provision focuses on two matters. First, some, such as the JFBA, see this as disadvantaging victims in countries such as Japan that would need to pursue claims in distant countries which may have only the minimum provisions required under the CSC.\textsuperscript{252} In advanced countries, such as the United States and Japan, legal protections are substantially stronger than the minimum provisions required by international treaty. The situation in developing countries is rather different as illustrated in the discussion of limitations on damages.

Second some, such as Prof. Currie, criticize the lack of neutral tribunals.\textsuperscript{253} The CSC and other agreements require that compensation be provided without discrimination on the basis of nationality, domicile or residence.\textsuperscript{254} Prof. Currie is concerned about forcing victims to sue in a court of a state economically linked to its own nuclear industry.\textsuperscript{255} He further argues for the application of the law of the place in which the damage occurred, not where the accident took place, because it is clear that there is a risk of damage in distant locations and victims are justified in relying on the safety standards of their own country.\textsuperscript{256}

On the other hand, it can also be noted, perhaps rather cynically, that from the perspective of a country like Japan which is more likely to be the location of an accident than a victim of transnational damage from a neighbor,\textsuperscript{257} it may be beneficial to be

\textsuperscript{251} CSC, supra note 1, art. 13(1).
\textsuperscript{252} August 2014 JFBA opinion, supra note 4, at 5.
\textsuperscript{253} Currie, supra note 4, at 85.
\textsuperscript{254} CSC, supra note 1, art. 3(2)(a).
\textsuperscript{255} Currie, supra note 4, at 95.
\textsuperscript{256} Id. at 97.
\textsuperscript{257} Takeuchi Sumiko (竹内純子), Wagakuni no Genshiryoku Jigyō no Rekishī to Genshiryoku Songai Baishō Seido no Settei Keii (我が国の原子力事業の歴史と原子力損害賠償制度の制定経緯) [The Historical Context of Nuclear Operations and Nuclear Damage Compensation in Japan], in 21 Seiki Seisaku Kenkyūjo (21世紀政策研究所) [The 21ST Century Public Policy Institute], Arata no Genshiryoku Songai Baishō Seido no Kōchiku ni Mukete (新たな原子力損害賠償制度の構築に向けて) [Toward the Establishment of a New Compensation System for Nuclear Damages] 51 (Sawa Akihiro ed. 2013), http://www.21ppi.org/pdf/thesis/131114_01.pdf [https://perma.cc/F7EH-
protected by provisions that require that claims be brought in your own courts.

VI. REFORM EFFORTS

In 2012 the IAEA’s International Expert Group on Nuclear Liability (INLEX) made recommendations on how the international community should adjust the system for compensating nuclear damages in the aftermath of the Fukushima accident. The report strongly recommended that states with nuclear reactors ratify at least one of the Conventions, and encouraged states with no reactors to consider joining a Convention to receive the benefits of ensuring compensation for transnational nuclear damage. The report specifically recommended that states with nuclear installations ensure the availability of funds to compensate all victims of a nuclear incident, without discrimination. Such states should: “establish compensation and financial security amounts significantly higher than the minimum amounts envisaged under the existing instruments,” “undertake regular reviews of the adequacy of compensation amounts . . . ,” “undertake regular reviews of the adequacy of financial security amounts . . . ,” “be prepared to set up alternative funding mechanisms where the amount of damage exceeds the available compensation and financial security,” “provide compensation for latent injuries,” “ensure that compensation is available in the case of an incident directly due to a grave natural disaster of an exceptional character,” and “ensure that all claims from a nuclear disaster are dealt with in a single forum in a prompt, equitable, and non-discriminatory manner with minimal litigation . . . .”

These recommendations address the issues with the provisions of the CSC raised in this paper. Monetary limits on liability have gradually increased but are still insufficient to cover a

W9A5] (noting the concern of Japan’s neighbors about transnational damage from a nuclear accident in Japan).


259 Id. at 3.

260 Id. at 3–4.
large accident. Concerns remain about the advisability of allowing national courts to adjudicate claims where the nuclear industry is a major stakeholder in the national economy. This paper has discussed how the international forum is not the best place to assure compensation to all domestic victims of a nuclear accident, though it is the only way to assure compensation to victims of nuclear damage caused by an accident in a foreign country. We have seen that Japan had to enact extraordinary measures to assure compensation for the Fukushima accident because it only required ¥ 120 billion of financial security despite the unlimited liability faced by its nuclear operators. However, Japan successfully innovated to develop a novel method for compensating the victims of the Fukushima accident. These recommendations, however, show no indication that there will be any change to the use of legal channeling.

In conclusion, in the existing treaties the protection of the nuclear industry from liability is prioritized over ensuring adequate victim compensation. However, the issue of civil liability for nuclear damages, in particular transnational damages, is likely to become more pressing. At present, there are 60 new nuclear reactors under construction, half of which are in Asia. Of these, 20 are in China, which is not party to any of the Conventions, has most of its provisions on compensation for nuclear damage only in administrative law, and provides for only minimal amounts of operator liability as compared to the CSC or Revised Vienna Convention. Innovation on the international stage has tended to follow major accidents. There can be little question that there will be future accidents. We shall see how the current framework holds up and evolves should there be another accident like Chernobyl with substantial transnational damages.

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