American University International Law Review

Volume 37 | Issue 4 Article 5

2023

Preserving the Sea in a Radioactive World: How Japan's Plan to Release Treated Nuclear Wastewater into Pacific Ocean Violates UNCLOS

Victoria Cruz-De Jesus

PRESERVING THE SEA IN A RADIOACTIVE WORLD: HOW JAPAN'S PLAN TO RELEASE TREATED NUCLEAR WASTEWATER INTO THE PACIFIC OCEAN VIOLATES UNCLOS

VICTORIA CRUZ-DE JESUS*

* Victoria Cruz-De Jesus is originally from Westchester, New York. Victoria graduated from Wesleyan University in 2018 with a B.A. in East Asian Studies and a Certificate in International Relations. Before law school, Victoria worked for the U.S. House Committee on Ways and Means as a Staff Assistant, which prompted her to attend law school and inspired her interest in international law and policy. At American University Washington College of Law, Victoria is interested in international trade, intellectual property and climate change law.

I. INTRODUCTION

On December 10, 1982, the 1973–1982 United Nations Convention on the Law of the Sea (UNCLOS III) concluded.[1] Japan became a signatory to the Convention on February 7, 1983 and ratified the Convention on June 20, 1996.[2] Subsequently, Japan became a party to the treaty and committed itself to abide by the United Nations Convention on the Law of the Sea (UNCLOS).[3]

Now, Japan's commitment to its obligations under UNCLOS is being tested.[4] After the Fukushima Daiichi nuclear disaster in 2011, Japan has struggled to store and dispose of nuclear wastewater.[5] Since 2013, the Tokyo Electric Power Company (TEPCO) has stored Advanced Liquid Processing System (ALPS) treated, tritiated

1. *The United Nations Convention on the Law of the Sea (a historical perspective)*, U.N. DIV. FOR OCEAN AFF. AND THE LAW OF THE SEA, https://www.un.org/depts/los/convention_agreements/convention_historical_perspective.htm#Third%20Conference.

2. United Nations Convention of the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 397, [hereinafter UNCLOS] https://treaties.un.org/Pages/showDetails.aspx?objid=0800000280043ad5&clang=en.

3. *Id.*; *see Chapter Four: Becoming a Party to the Convention and the Optional Protocol – Joining the Convention*, U.N. DEPT. OF ECON. AND SOC. AFFS., https://www.un.org/development/desa/disabilities/resources/handbook-for-parliamentarians-on-the-convention-on-the-rights-of-persons-with-disabilities/chapter-four-becoming-a-party-to-the-convention-and-the-optional-protocol.html (explaining that a "A State becomes a party to the Convention and Optional Protocol by signing and ratifying either instrument or by acceding to them").

4. *See The Japanese Government's Decision to Discharge Fukushima Contaminated Water Ignores Human Rights and International Maritime Law*, GREENPEACE (Apr. 13, 2021), https://www.greenpeace.org/international/press-release/47207/the-japanese-governments-decision-to-discharge-fukushima-contaminated-water-ignores-human-rights-and-international-maritime-law (discussing Japan's commitment to their UNCLOS obligations).

5. *See* Motoko Rich, *Struggling With Japan's Nuclear Waste, Six Years After Disaster*, N.Y. TIMES (Mar. 11, 2017), https://www.nytimes.com/2017/03/11/world/asia/struggling-with-japans-nuclear-waste-six-years-after-disaster.html (acknowledging that the Japanese government still has not solved a "basic problem: what to do with an every-growing pile of radioactive waste").

wastewater in storage tanks.[6] However, in the summer of 2022, these storage tanks are expected to reach capacity.[7] In response, Japan announced its plan to release the tritiated wastewater into the Pacific Ocean to dispose of the contaminated water.[8]

Japan's policy to release wastewater into the Pacific Ocean constitutes a violation of Japan's obligations under UNCLOS Article 192, which requires state parties to "protect and preserve the marine environment."[9] Additionally, Japan's pollution of the marine environment from land-based sources violates UNCLOS Article 207.[10]

Part II of this Comment will discuss a brief history of UNCLOS and Japan's obligations under UNCLOS.[11] Part II will also provide information about the Fukushima Daiichi nuclear disaster.[12] Specifically, it will explain how contaminated water became an obstacle to shutting down the Fukushima Daiichi power plant and how TEPCO and the Japanese government are addressing the issue today.[13]

Part III will argue that Japan's plan to release ALPS-treated, tritiated wastewater into the ocean in two years violates Japan's obligations under UNCLOS.[14] The analysis will focus on UNCLOS Article 192, which explains state parties' general obligations to preserve the environment and Article 207, which defines the scope of "pollution from land-based sources."[15] Afterwards, this Comment

6. *See Fukushima Daiichi Accident*, WORLD NUCLEAR ASS'N, https://world-nuclear.org/information-library/safety-and-security/safety-of-plants/fukushima-daiichi-accident.aspx (last updated Apr. 2021) (discussing TEPCO's storage of ALPS).

7. *Id.*

8. *See* Anthony Kuhn, *Japan to Dump Wastewater from Wrecked Fukushima Nuclear Plant into Ocean*, NPR (Apr. 13, 2021), https://www.npr.org/2021/04/13/986695494/japan-to-dump-wastewater-from-wrecked-fukushima-nuclear-plant-into-pacific-ocean (discussing the more than a million tons of still radioactive wastewater that Japan will dump into the ocean).

9. UNCLOS, *supra* note 2, art. 192.

10. *Id.* art. 207.

11. *See* discussion *infra* Sections II.A–B.

12. *See* discussion *infra* Section II.D.

13. *See* discussion *infra* Section II.D.

14. *See* discussion *infra* Sections III.A–B.

15. *See* discussion *infra* Sections III.A–B.

will analyze Japan's policy to release tritiated wastewater into the Pacific Ocean within the framework of Japan's obligation under customary international law.[16]

Part IV offers recommendations that may be used to bring Japan into compliance with UNCLOS.[17] Firstly, Japan should take alternative measures to dispose of the contaminated water.[18] Secondly, if Japan fails to utilize alternative methods, Part IV recommends that UNCLOS be amended to allow affected states to enforce UNCLOS against Japan.[19] Additionally, Part IV recommends that any update to UNCLOS consider the increasingly global effects of environmental degradation.[20]

Finally, Part V concludes that Japan's policy to release tritiated wastewater into the Pacific Ocean violates Japan's obligations under UNCLOS and customary international law to protect and preserve the marine environment from pollution from land-based sources.[21]

II. BACKGROUND

A. THE HISTORY OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

In 1973, the Third United Nations Conference on the Law of the Sea (UNCLOS III) convened in New York pursuant to resolution 2750C (XXV) adopted by the General Assembly on December 17, 1970.[22] UNCLOS III addressed growing tensions between states about the effects that technological advancements had on states' claims to ocean territory and resources.[23] After eleven sessions, UNCLOS III adopted UNCLOS on December 10, 1982.[24]

16. *See* discussion *infra* Section III.C.
17. *See* discussion *infra* Section IV.A.
18. *See* discussion *infra* Section IV.A.
19. *See* discussion *infra* Section IV.B.
20. *See* discussion *infra* Section IV.C.
21. *See* discussion *infra* Part V.
22. *Third United Nations Conference on the Law of the Sea*, CODIFICATION DIV. PUBL'N, https://legal.un.org/diplomaticconferences/1973_los.
23. *UNCLOS (a historical perspective)*, *supra* note 1 (specifying that states were concerned about nuclear submarines exploring deep water, antiballistic missile systems placed on the seabed and super-tanks causing oil spills).
24. CODIFICATION DIV. PUBL'N, *supra* note 22.

UNCLOS III added major features to UNCLOS, including the delineation of maritime zones,[25] provisions for the passage of ships, and protection of the marine environment.[26]

B. JAPAN'S OBLIGATIONS UNDER UNCLOS

Shortly after UNCLOS III adopted UNCLOS, Japan signed the treaty on February 7, 1983.[27] At that time, Japan was not bound by the obligations of UNCLOS.[28] A state becomes a party to a treaty by signing and ratifying a treaty or by acceding to it.[29] Once a state signs the treaty, it must expressly consent to be bound to the treaty through ratification[30] or accession to become a party to the treaty.[31] Thus, on June 20, 1996, when Japan ratified UNCLOS, Japan became bound to UNCLOS.[32]

UNCLOS is a multilateral treaty[33] that establishes a basic legal framework for all marine and maritime activities.[34] The 168 state parties to the treaty have an obligation to one another to abide by UNCLOS.[35] When one state violates UNCLOS, other parties to the

---

25. *See, e.g.*, Simon O. Williams, *Law of the Sea Mechanisms: Examining UNCLOS Maritime Zones*, THE MAR. EXEC. (Dec. 1, 2014), https://www.maritime-executive.com/Article/Law-of-the-Sea-Mechanisms-Examining-UNCLOS-Maritime-Zones-2014-12-01 (explaining that "Maritime Zones" in "UNCLOS sections the oceans, splitting marine areas into five main zones, each with a different legal status: Internal Waters, Territorial Sea, Contiguous Zone, Exclusive Economic Zone (EEZ) and the High Seas.").

26. *UNCLOS (a historical perspective)*, *supra* note 1.

27. UNCLOS, *supra* note 2.

28. *See Becoming a Party to the Convention*, *supra* note 3.

29. *Id.*

30. *Id.* ("Ratification" requires that a state first sign the treaty, then the state may become bound by the treaty upon formal confirmation of its consent to be bound; whereas, "accession" only requires that a state deposit the instrument of accession with the UN Secretary-General).

31. *Id.*

32. *See* UNCLOS, *supra* note 2.

33. *Multilateral Treaty Law and Legal Definition*, U.S. LEGAL, https://definitions.uslegal.com/m/multilateral-treaty (defining a "multilateral treaty" as a written agreement between three or more sovereign states that establishes the rights and obligations between the parties under the treaty).

34. *UNCLOS*, INT'L UNION FOR CONSERVATION OF NATURE, https://www.iucn.org/theme/marine-and-polar/our-work/international-ocean-governance/unclos.

35. *See Multilateral Treaty Law and Legal Definition*, *supra* note 33

treaty may enforce the treaty against the violating party.[36]

As a state party to UNCLOS, Japan has an obligation to abide by UNCLOS Article 192 and Article 207.[37] UNCLOS Article 192 imposes on state parties the "obligation to protect and preserve the marine environment."[38] Under UNCLOS, protecting and preserving the marine environment requires abstaining from "pollution of the marine environment."[39]

UNCLOS describes the ways in which pollution of the marine environment may occur.[40] In this case, Japan's policy must be assessed under UNCLOS Article 207, which addresses "pollution from land-based sources." UNCLOS Article 207 states that:

> (1) States shall adopt laws and regulations to prevent, reduce and control pollution of the marine environment from land-based sources, including . . . pipelines. . . .
>
> (2) States shall take other measures as may be necessary to prevent, reduce and control such pollution.[41]

(discussing that as a multilateral treaty, UNCLOS establishes the rights and obligations between the parties under the treaty).

36. *See* UNCLOS, *supra* note 2, art. 213–22 (delineating enforcement with respect to pollution and enforcement by flag, port and coastal states).

37. *Id.*

38. *Id.* art. 192.

39. *Id.* art. 1(4) (defining "pollution of the marine environment" as: the introduction by man, directly or indirectly, of substances or energy into the marine environment, . . . which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities").

40. *See, e.g.*, *id.* art. 207–12 (promulgating rules to prevent, reduce, and control pollution of the marine environment by pollution from land-based sources, pollution from seabed activities, pollution from activities in the Area, pollution by dumping, pollution from vessels, and pollution from or through the atmosphere).

41. *See* The Subcommittee on Handling of the ALPS Treated Water Report, Ministry of Econ., Trade and Indus. (2020), p. 5 (The Japanese government's Tritiated Water Task Force [hereinafter the Task Force] conducted a study comparing each alternative waste disposal method. The study compared the technical feasibility, regulatory feasibility, duration, cost, scale, secondary waste creation, radiation exposure to workers, and other concerns associated with each alternative measure. The study determined that all disposal methods (geosphere injection, discharge into the sea, vapor release, hydrogen release, and underground

> (3) States shall endeavor to harmonize their policies in this connection at the appropriate regional level.
>
> (4) States, acting especially through competent international organizations or diplomatic conference, shall endeavor to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control pollution of the marine environment from land-based sources. . . .[42]

When a party to UNCLOS fails to preserve and protect the environment by polluting from land-based sources, the party violates its obligations under UNCLOS.[43]

C. CUSTOMARY INTERNATIONAL LAW

A customary rule of international law is a rule that the international community of states accepts by international agreement[44] or as a product of the general practices common to the major legal systems of the world.[45] When customary international law is a product of the general and consistent practices of states, the practices must arise from a sense of legal obligation (opinio juris).[46] Practices of states include diplomatic acts and instructions, public measures, and other governmental acts and statements of policy.[47] A state's legal obligation may be inferred from a state's acts or omissions.[48]

To determine whether a general and consistent state practice supports customary international law, weight is given to the judgments and opinions of international as well as national judicial

---

burial) were technically feasible; however, Japan chose discharge to the sea as its final disposal policy).

42. UNCLOS, *supra* note 2, art. 207.

43. *Id.*; UNCLOS, *supra* note 2, art. 192.

44. RESTATEMENT (THIRD) OF FOREIGN REL. L. § 102 (AM. L. INST. 1987) ("International agreements . . . may [also] lead to the creation of customary international law when such agreements are intended for adherence by states generally and are in fact widely accepted").

45. *Id.*

46. *Id.*; *see* RESTATEMENT (THIRD) OF FOREIGN REL. LAW § 102 cmt. c (defining "opinio juris" as a practice that is generally followed by states, which states feel legally obligated to regard).

47. RESTATEMENT (THIRD) OF FOREIGN REL. L. § 102 cmt. b.

48. RESTATEMENT (THIRD) OF FOREIGN REL. L. § 102 cmt. c.

and arbitral tribunals,[49] the writings of scholars,[50] and state pronouncements of international law that are not challenged by other states.[51] Conversely, state acts or practices that are inconsistent with a potential customary international law may support the conclusion that there is insufficient state practice to form customary law.[52]

D. THE FUKUSHIMA DAIICHI NUCLEAR DISASTER AND ITS AFTERMATH

On March 11, 2011, a massive earthquake struck the northeastern coast of Japan near the Fukushima Daiichi nuclear plant.[53] Within forty-one minutes, a tsunami destroyed the nuclear plant.[54] Seawater submerged and damaged the nuclear plant's electrical and cooling systems.[55] With both systems down, the nuclear reactors began to melt down.[56]

After two weeks, TEPCO stabilized the reactors;[57] however, by week three post-disaster, and even to this day, removing and managing contaminated water[58] from Fukushima Daiichi was, and

---

49. *See Sarei v. Rio Tinto*, 221 F. Supp. 2d 1116, 1131 (C.D. Cal. 2002) ("ascertain[ing] the content of the law of nations, courts consult the works of jurists on public law, consider the general practice of nations, and refer to court decisions that discuss and enforce international law").

50. *See, e.g.*, *The Paquete Habana*, 175 U.S. 677, 698–700 (1900) (relying on the writings of scholars, the court determined that under international customary law, coastal fishing vessels that are unarmed, cannot be captured as a prize of war).

51. RESTATEMENT (THIRD) OF FOREIGN REL. L. § 103 (AM. L. INST. 1987).

52. *See* Jesse Cameron Glickenhaus, *Potential ICJ Advisory Opinion: Duties to Prevent Transboundary Harm from GHG Emissions*, 22 N.Y.U. ENV'T L.J. 117, 136 (2015) (discussing customary international law).

53. *See Fukushima Disaster: What Happened at the Nuclear Plant?*, BBC (Mar. 10, 2021), https://www.bbc.com/news/world-asia-56252695 (discussing the disaster at Fukushima after a powerful earthquake).

54. *Id.*

55. *See Fukushima Daiichi Accident*, *supra* note 6.

56. *Id.*; *see* Jenny Marder, *Mechanics of a Nuclear Meltdown Explained*, PBS (Mar. 15, 2011), https://www.pbs.org/newshour/science/mechanics-of-a-meltdown-explained ("a nuclear meltdown" is an accident resulting from severe heating and a lack of sufficient cooling at the reactor core that causes nuclear fuel to melt).

57. *See Fukushima Daiichi Accident*, *supra* note 6 (explaining that eleven reactors at four nuclear power plants shut down automatically when the earthquake hit, and TEPCO employees worked to restore the reactors the following weeks).

58. *See Basic Policy on Handling of the ALPS Treated Water*, Ministry of

continues to be, a serious challenge.[59] To stabilize the reactors, TEPCO injected water into the reactor vessel, which cooled the reactors but produced contaminated water.[60] TEPCO then stored the contaminated water in storage containers.[61] By March 2011, the containers were full.[62] With no place to put the contaminated water, the Japanese government allowed TEPCO to release slightly contaminated water into the Pacific Ocean.[63]

Since August 2011, TEPCO, the Japanese government, and international regulators have established more permanent solutions to manage contaminated water and to decommission[64] the Fukushima Daiichi power plant.[65] TEPCO's plan proposes that the

---

Econ., Trade and Indus. 1, 1 (2021) https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/202104_bp_breifing.pdf (defining "contaminated water" as water that contains large amounts of radioactive materials that have been generated in the Fukushima Daiichi building every day since the accident).

59. *See Fukushima Daiichi Accident*, *supra* note 6 (explaining that as a precaution over 100,000 people were evacuated from their homes); *see also id.* at 1 (explaining the process by which contaminated water is treated to meet the "regulatory standards for discharge").

60. *See Fukushima Daiichi Accident*, *supra* note 6 (reporting that in the absence of normal heat removal devises, water had to be continuously injected into the reactor units to cool the reactors); *see also ALPS Treated Water Report*, *supra* note 41, at 12 (concluding that to fundamentally reduce the generation of contaminated water TEPCO will eventually need to stop the injection of cooling water to the fuel debris).

61. *Fukushima Daiichi Accident*, *supra* note 6.

62. *See id.* (stating that by the end of March 2011, the initial 350 steel storage tanks and the 1000 newly constructed storage tanks were largely full of contaminated water pumped from the reactor buildings).

63. *See id.* at 17 ("with government approval, [from April 4 to April 10, 2013] TEPCO released to the sea about 10,400 cubic met[er]s of slightly contaminated water . . . in order to free up storage for more highly-contaminated water . . . which needed to be removed to make safe working conditions").

64. *See Nuclear Decommissioning*, EDF https://www.edfenergy.com/about/nuclear/decommissioning ("In its simplest form, decommissioning means removing all the fuel from the nuclear power station, taking down the plant and facilities and restoring the site to an agreed end-state ready for some form of re-use.").

65. *See generally Mid-and-Long-Term Roadmap Towards the Decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Station*, Ministry of Economy, Trade and Indus. 1, 13–27 (2019) https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/201912273.pdf (addressing specific long-term measures for contaminated water management, fuel removal from spent fuel pools, fuel debris retrieval, waste management and other specific

decommissioning effort begin by removing spent fuel[66] and retrieving fuel debris[67] from the nuclear plant.[68] Afterwards, decommissioning will continue for thirty to forty years.[69]

To decommission Fukushima Daiichi nuclear plant and remove the contaminated water, in August 2013, TEPCO built a wastewater treatment facility which used the ALPS water purification system.[70] ALPS is a chemical system that meets the regulatory standards for discharge by removing radionuclides[71] from contaminated water, with an exception of tritium.[72] Tritium cannot be removed from contaminated wastewater by purification because its molecular structure closely resembles that of water.[73]

Tritium is an unstable element used to create sources of light (for example, light for "EXIT" signs).[74] Tritium also exists naturally in rainwater, seawater, tap water, and inside the human body as a form

---

measures).

66. *See Spent Nuclear Fuels*, U.S. NUCLEAR REGUL. COMM'N (Mar. 9, 2021), https://www.nrc.gov/reading-rm/basic-ref/glossary/spent-nuclear-fuel.html ("spent nuclear fuel" is nuclear reactor fuel that has been used to the extent that it can no longer sustain a nuclear fission chain reaction); *see also Basic Policy on Handling of the ALPS Treated Water*, *supra* note 58, at 6 (unlike fuel debris, "spent fuel" remains after its usage for power generation in order to continuously cool and suppress the heat of the nuclear reactor).

67. *See The Status of Fuel Debris Retrieval*, TEPCO, https://www.tepco.co.jp/en/hd/decommission/progress/retrieval/index-e.html (after the Fukushima Daiichi accident occurred, the nuclear plant's cooling system failed resulting in the overheating and melting of fuel. "Fuel debris" refers to the melted fuel and other substances that formed after the melted fuel cooled and re-solidified).

68. *See Mid-and-Long-Term Roadmap*, *supra* note 65, at 13 (detailing the three phases that are necessary to complete decommissioning).

69. *Id.*

70. *See Fukushima Daiichi Accident*, *supra* note 6 ("TEPCO built a new wastewater treatment facility to treat contaminated water.").

71. *See Radionuclides*, EPA, https://www.epa.gov/radiation/radionuclides ("radionuclides" are naturally occurring or man-made, radioactive forms of elements. Radionuclides are measured in terms of their half-life, which measures the time required for half the radioactive atom to decay).

72. *Basic Policy on Handling of the ALPS Treated Water*, *supra* note 58, at 6 (explaining the process by which "ALPS treated water" is purified).

73. *Id.*

74. *See EPA Facts About Tritium*, EPA, https://semspub.epa.gov/work/HQ/175261.pdf (describing what tritium is and how it is used).

of tritiated water.[75] When in the human body, tritium is taken in through drinking water and is excreted from the body.[76] Generally, the risk to the average person from tritium is low because current environmental levels of tritium are low.[77] Conversely, exposure to high concentrations of tritium may pose health risks to individuals.[78] Tritium is most dangerous when it decays[79] because it emits low-level radiation that may affect humans cells.[80]

Tritiated wastewater is currently stored in tanks onsite the Fukushima Daiichi plant.[81] Unsurprisingly, these tanks are again expected to reach full capacity by the summer of 2022.[82] In response, the Japanese government confirmed that the tritiated wastewater will be released into the Pacific Ocean in 2023.[83]

Japan's plan to discharge tritiated wastewater into the Pacific Ocean requires the use of an intake/discharge facility.[84] Once the

75. *See ALPS Treated Water Q&A*, MINISTRY OF ECON., TRADE AND INDUS. (2021), https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/qa.html.

76. *See EPA Facts About Tritium*, *supra* note 74 (explaining that tritium particles cannot pass through the skin surface).

77. *See id.* (describing that accidental exposures from elevated levels of tritium can impact an individual's health).

78. *See Tritium*, NAT. NUCLEAR SEC. ADMIN., https://www.energy.gov/sites/prod/files/migrated/nnsa/2017/11/f42/Tritium%20Fact%20Sheet%20Oct%2017%202011.pdf (describing what happens to the human body if tritium enters the body either through inhalation, ingestion, or absorption through the skin).

79. *Id.* ("radioactive decay" is when a radioactive element changes spontaneously into a different atom and the process emits a form of radiation. In the case of tritium decay, when tritium's hydrogen molecule changes into helium, tritium decays and radiation is emitted).

80. *See id.* (explaining that the most significant health effects associated with tritium radiation exposure are the result of tritium being absorbed or ingested into the body because the low-level radiation exposure may cause cancer fatalities that take many years to develop).

81. *See Fukushima Daiichi Water to be Discharged into the Sea*, WORLD NUCLEAR NEWS (Apr. 13, 2021), https://world-nuclear-news.org/Articles/Japan-to-discharge-treated-Fukushima-Daiichi-water (explaining how the contaminated water is treated and stored in tanks).

82. *Id.*

83. *See id.* (quoting Prime Minister Yoshihide Suga, "[d]isposal of the treated water is an unavoidable challenge for the decommissioning of the plant . . . the government concluded that the ocean release is a realistic method").

84. *See Status of Review Regarding the Handling of ALPS Treated Water*

tritiated water is ALPS-treated and diluted to the required limit, TEPCO will use a pipeline that carries the wastewater from the Fukushima Daiichi nuclear power plant, under the nearby harbor and into a designated area in the Pacific Ocean.[85] The designated area is one where no fishing is conducted.[86] Thus, to decommission the Fukushima Daiichi power plant, Japan plans to release tritiated water into the Pacific Ocean in 2023.[87]

III. ANALYSIS

Japan is a party to UNCLOS; therefore, Japan is required to abide by the rules and obligation of UNCLOS.[88] UNCLOS Article 192 explicitly asserts that "[s]tates have the obligation to protect and preserve the marine environment."[89] Additionally, Article 207 imposes an affirmative obligation on states to prevent, reduce, and control pollution from land-based sources.[90] Japan is in violation of its obligations under UNCLOS because it plans to release tritiated wastewater into the Pacific Ocean from the Fukushima Daiichi power plant.[91]

A. JAPAN'S POLICY VIOLATES UNCLOS ARTICLE 192

Japan's plan to release tritiated wastewater into the Pacific Ocean in 2023 contravenes Japan's duties under UNCLOS Article 192.[92]

[Overview], TEPCO (Aug. 25, 2021), 1, 5 https://www.tepco.co.jp/en/hd/newsroom/press/archives/2021/pdf/210825e0101.pdf (explaining the process by which ALPS treated water will be discharged).

85. *See id.* at 5, 7 ("ALPS treated water will be diluted using seawater from outside the harbor to avoid impact of radioactive material in the harbor, and discharged via the undersea tunnel dug through bed-rock to prevent discharged water recirculating into the seawater taken in.").

86. *Id.*

87. *See Fukushima Daiichi Water to be Discharged into the Sea*, *supra* note 81.

88. *See* UNCLOS, *supra* note 2 (providing the dates when Japan was notified, nominated, signed, and ratified the treaty).

89. *Id.* art. 192.

90. *Id.* art. 207.

91. *See* UNCLOS, *supra* note 2, art. 192; *see also* UNCLOS, *supra* note 2, art. 207; *see generally Handling of ALPS Treated Water [Overview]*, *supra* note 84, at 5, 7 (illustrating Japan's discharge to sea plan).

92. *See* UNCLOS, *supra* note 2, art. 192; *see also Handling of ALPS Treated Water [Overview]*, *supra* note 84, at 5, 7 (explaining how Japan's plan to discharge

Japan violates UNCLOS because the plain language of the treaty requires that Japan protect and preserve the marine environment.[93] The plain language of a treaty is controlling unless the language is ambiguous.[94] The language of Article 192 is unambiguous; therefore, Japan's obligations under UNCLOS should be analyzed according to the plain language of Article 192.[95] Although Japan's plan violates the plain language of Article 192, under current case law, enforcing UNCLOS against Japan may prove difficult.[96] Analyzing Japan's obligations under current case law highlights the difficulties of enforcing UNCLOS Article 192.[97]

i. Plain Language

Under a plain language analysis of UNCLOS Article 192, Japan's policy to release tritiated wastewater into the Pacific Ocean in 2023 fails to protect and preserve the marine environment.[98] As previously mentioned, states are obligated to protect and preserve the marine environment under UNCLOS Article 192.[99] A plain language interpretation of "have" within the phrase "have the obligation" indicates that states have an affirmative and mandatory obligation to protect and preserve the environment.[100] Further, under Article 192, a

---

the ALPS water into the Pacific Ocean violated UNCLOS standards).

93. UNCLOS, *supra* note 2, art. 192; *see generally Handling of ALPS Treated Water [Overview]*, *supra* note 84, at 5, 7.

94. *See* Tesha Chavier, *International Taxation Law – Treaty Law v. United States Revenue Law*, 14 SUFFOLK TRANSNAT'L L.J. 695, 710 (1991) ("The Supreme Court should have relied on the 200-year-old rule of construction that the plain language of a treaty controls in the absence of any facial ambiguity.").

95. *See* Nilufer Oral, *Ocean Acidification: Falling between the Legal Cracks of UNCLOS and the UNFCCC*, 45 ECOLOGY L.Q. 9, 26 (2018) (stating that, based on the language of Article 192, the Permanent Court of Arbitration determined that states have a clear obligation to protect and preserve the environment).

96. *See South China Sea Arbitration* (Phil. v. China), PCA Case No. 2013–19, Award, at 373–74, 475–76 (Perm. Ct. Arb. 2016) (declaring that the PRC violated UNCLOS by failing to protect and preserve the marine environment).

97. *See* discussion *infra* Section III.A.ii.

98. *See* UNCLOS, *supra* note 2, art. 192 (providing the obligation states must follow); *see generally Handling of ALPS Treated Water [Overview]*, *supra* note 84, at 5, 7.

99. UNCLOS, *supra* note 2, art. 192.

100. *See* Grant Wilson, *Deepwater Horizon and the Law of the Sea: Was the Cure Worse Than the Disease?*, 21 B.C. ENV'T AFF. L. REV. 63, 90 (2014) ("First,

state has a duty to "protect" the marine environment, which means the state must "abstain [from] harmful activities and tak[e] affirmative measure to ensure that environmental deterioration does not occur."[101] Therefore, because Japan's policy is an active plan to release tritiated wastewater into the Pacific Ocean, Japan flouts its legal obligation under UNCLOS.[102]

ii. Case Law

Although Japan's policy violates the plain language of UNCLOS Article 192, *The South China Sea Arbitration* proves that enforcing UNCLOS against polluters is difficult. [103] In *The South China Sea Arbitration*, the Permanent Court of Arbitration (the Tribunal) held that the People's Republic of China (PRC) had violated UNCLOS Article 192 when it reclaimed land in the South China Sea, and subsequently constructed artificial islands and structures at seven coral reefs.[104] The PRC refused to participate in the proceedings claiming that the Tribunal lacked jurisdiction to consider the Philippines' claim.[105] Regardless, the Tribunal determined that the PRC's actions interfered with the Philippines' exclusive economic zone (EEZ) and continental shelf; therefore, the Philippines had an actionable claim against the PRC.[106] Additionally, because the Philippines provided satellite imagery, which showed that up to sixty percent of shallow reef habitat had been destroyed, the Tribunal had

---

an interpretation of the ordinary meaning of Article 192 is necessary. In making such an interpretation, the word "have" in the phrase "have the obligation" indicates a mandatory legal obligation; that is, a country must protected and preserve the marine environment."); *see also* UNCLOS, *supra* note 2, art. 192.

101. Wilson, *supra* note 100.

102. *See* UNCLOS, *supra* note 2, art. 192.

103. *South China Sea Arbitration*, PCA Case No. 2013–19 at 373–74, 475–76.

104. *See id.* at 475–76 (finding that the China's land reclamation and construction of artificial islands and structures at Cuarteron Reef, Fiery Cross Reef, Gaven Reef (North), Johnson Reef, Hughes Reef, Subi Reef, and Mischief Reef has caused severe, irreparable harm to the coral reef ecosystem).

105. Raul Pedrozo, *The South China Sea Arbitration Award*, 97 INT'L L. STUD. SER. U.S. NAVAL WAR COLL. 62, 63 (2021) (under UNCLOS, a party's absence of failure to defend itself does not bar the proceedings from commencing).

106. *See id.* at 67 (the Tribunal determined that the PRC was (a) interfering with Philippine fishing in its EEZ and petroleum exploration; (b) constructing artificial islands at a coral reef without the Philippines' permission; and, (c) failing to prevent PRC fishermen from fishing in the Philippines' EEZ).

evidence that the PRC's actions harmed the coral reef ecosystem in violation of UNCLOS Article 192.[107] Thus, the Tribunal declared that the PRC shall: (1) respect the Philippines' rights and freedoms under UNCLOS; (2) comply with its duties under UNCLOS; and (3) exercise its rights and freedoms in the disputed area with due regard to the rights and freedoms of the Philippines.[108]

Japan's policy and the remedies available to prevent Japan's policy from being implemented are distinguishable from *The South China Sea Arbitration*.[109] Many neighboring states, including the PRC and South Korea, expressed concern about Japan's discharge into the sea policy.[110] Unlike the Philippines in *The South China Sea Arbitration*, the neighboring states cannot bring their claim against Japan because these states have not been injured, nor can they provide evidence that they will be injured by Japan's policy.[111]

Additionally, *The South China Sea Arbitration* is distinguishable because, although the Philippines provided proof that the PRC's actions caused environmental degradation, the basis of the

107. Jay M. Zitter, Annotation, *U.N. Convention on the Law of the Sea, 1833 U.N.T.S. 3 – Global Cases*, 30 A.L.R. Fed. 3d § 7 at 50 (2018).

108. Pedrozo, *supra* note 105, at 68 (listing the future conduct the PRC shall follow).

109. *See* Kahn, *supra* note 8 (demonstrating that Japan's plan has not yet taken effect).

110. *See* Ko Jun-tae, *Korea Condemns Japan's Decision to Release Water from Fukushima*, THE KOREA HERALD (Apr. 13, 2021), http://www.koreaherald.com/view.php?ud=20210413000889 (condemning "Japan's decision to release more than 1 million tons of contaminated water from the destroyed Fukushima nuclear power plant, saying the radioactive water threatens the safety of neighboring countries and their marine environments"); *see also* Liu Caiyu et al., *China Urges Japan to Rethink All Safe Ways of Disposal of Nuclear-Contaminated Water; Legal Battle Considered Even Without US Cooperation*, GLOBAL TIMES (Apr. 18, 2021), https://www.globaltimes.cn/page/202104/1221379.shtml (China's Ministry of Ecology and Environment expressed that "a unilateral decision by Japan to dump contaminated water into the sea before exhausting all safe methods of disposal or fully consulting with stakeholders is irresponsible").

111. *See* Gao Zhiguo & Qian Jiangtao, *Potential Victimized Countries Can Take Legal Action Against Japan Dumping Radioactive Waters*, GLOBAL TIMES (Apr. 19, 2021), https://www.globaltimes.cn/page/202104/1221493.shtml (it is feasible that South Korea may ask for provisional measures from the International Court of Justice (ICJ) or International Tribunal for the Law of the Sea (ITLOS); however, if South Korea applies for provisional measures or files a lawsuit now, there will likely be a lack of evidence of material harm).

Philippines' claim relied upon the fact that the PRC's actions affected the Philippines' sovereign territory.[112] Here, Japan plans to release the tritiated wastewater into the Pacific Ocean from Japan's northeast coast, far from other neighboring countries, so the same sovereignty claim that the Philippines relied on in the South China Sea Arbitration may not exist or may be incredibly difficult to prove.[113]

The PRC's violation of UNCLOS is different from Japan's violation, but *The South China Sea Arbitration* is important because the case highlights that violations of UNCLOS may be enforceable when an injured state has evidence of pollution of the marine environment and the polluter state violates the injured state's territorial sovereignty.[114] In Japan's case, states will not be able to assess the environmental impact of Japan's policy to release tritiated water into the Pacific Ocean until after the violation occurs.[115] However, if injured states are able to provide evidence that Japan's policy is negatively impacting their territorial sovereignty or marine ecosystems, the injured states may hold Japan accountable for violating UNCLOS Article 192.[116]

---

112. *See* Pedrozo, *supra* note 105, at 67.

113. *See Handling of ALPS Treated Water [Overview]*, *supra* note 84, at 5, 7 (proposing that the outlet of the undersea tunnel is installed 1.5km from Japan's northeast shore within in an area where common fishery rights are not set).

114. *See* Zitter, *supra* note 107 (the Tribunal declared that the PRC breached its obligations under UNCLOS Article 192, 194(1) and 194(5) after the Tribunal reviewed satellite imagery that found that up to 60% of the shallow reef ecosystem was directly destroyed by China's construction activities); *see also South China Sea Arbitration*, *supra* note 96, at 475–76 (holding that the PRC failed to protect and preserve the marine environment in the South China Sea by not cooperating or coordinating with the other States bordering the South China Sea); *see also* Perozo, *supra* note 105, at 67 (determining that the PRC's actions interfered with the Philippines' sovereign rights in its Exclusive Economic Zone).

115. *See* Zhiguo & Jiangtao, *supra* note 111 (asserting that if South Korea were to file a lawsuit to the ICJ or the ITLOS, there would likely be a lack of evidence of material harm because Japan's discharge policy will commence in two years).

116. Zitter, *supra* note 107 (the Tribunal held that the PRC violated its obligations concerning marine pollution under UNCLOS Article 192 after reviewing satellite imagery that demonstrated that the PRC's actions destroyed 60% of the shallow reef habitat in the South China Sea). *Cf.* Zhiguo & Jiangtao, *supra* note 111 (inferring that if South Korea had evidence of material harm, it could file a lawsuit in the ICJ or the ITLOS).

B. JAPAN'S POLICY VIOLATES UNCLOS ARTICLE 207

Japan's plan to release tritiated wastewater into the Pacific Ocean in 2023 violates Japan's obligations under UNCLOS Article 207.[117] Japan violates UNCLOS because the plain language of the treaty requires that Japan protect and preserve the environment by abstaining from land-based pollution of the marine environment.[118] The plain language of a treaty is controlling unless the language is ambiguous.[119] Although terms in UNCLOS Article 207 require definition, UNCLOS Article 1(4) clarifies the ambiguous language.[120] Accordingly, Japan's obligations under UNCLOS should be analyzed under the plain language interpretation of Article 207 as defined by UNCLOS Article 1(4).[121] Although Japan's plan violates the plain language of Article 207, current case law limits the enforceability of UNCLOS Article 207 against states that pollute the environment from land-based sources.[122]

i. Plain Language

Under a plain language analysis of UNCLOS Article 207, Japan's policy to release tritiated wastewater into the Pacific Ocean constitutes polluting the marine environment from a land-based source.[123] As a result, Japan violates its obligations under UNCLOS when it releases ALPS-treated, tritiated wastewater into the Pacific

117. *See* UNCLOS, *supra* note 2, art. 207; *see also Handling of ALPS Treated Water [Overview]*, *supra* note 84, at 5, 7 (explaining Japan's discharge into the sea policy).

118. UNCLOS, *supra* note 2, art. 192; UNCLOS, *supra* note 2, art. 207; *see Handling of ALPS Treated Water [Overview]*, *supra* note 84, at 5, 7 (proposing that ALPS-treated, tritiated water will be discharged from the Fukushima Daiichi power plant into the sea through an underground tunnel).

119. Chavier, *supra* note 94, at 710.

120. *See* UNCLOS, *supra* note 2, art. 1(4) (defining "pollution of the marine environment").

121. *Id.*

122. *See* discussion *infra* Section III.B.ii.

123. UNCLOS, *supra* note 2, art. 1(4), art. 207; *see* JAMES HARRISON, SAVING THE OCEANS THROUGH LAW: THE INTERNATIONAL LEGAL FRAMEWORK FOR THE PROTECTION OF THE MARINE ENVIRONMENT, 64 (2017) ("land-based sources" covers a range of process and activities on land, including industrial, agricultural and urban discharges, which may be released into the marine environment directly through outflows and pipes or indirectly through rivers and the air).

Ocean from the Fukushima Daiichi power plant.[124]

As a threshold matter, Japan's policy to release tritiated wastewater into the Pacific Ocean meets the definition of "pollution of the marine environment."[125] Japan's policy to release tritiated wastewater into the ocean environment indisputably requires that TEPCO directly introduce tritiated wastewater into the marine environment.[126] TEPCO's discharge plan requires that humans, through the use of TEPCO's intake/discharge facility, introduce ALPS-treated, tritiated wastewater into the marine environment adjacent to the Fukushima Daiichi nuclear plant via an underwater pipe.[127]

Additionally, tritiated wastewater may constitute "pollution" under UNCLOS.[128] For tritiated water to qualify as "pollution," the tritiated water must pose a deleterious effect that manifests in either: (1) harm to living resources and marine life; (2) hazards to human health; or, (3) hindrances to marine activities.[129] Japan's policy to release

124. *See* UNCLOS, *supra* note 2, art. 207 (requiring that states abstain from land-based pollution into the marine environment); *see also Handling of ALPS Treated Water [Overview]*, *supra* note 84, at 5, 7 (demonstrating how ALPS-treated, tritiated wastewater will be discharged into the sea from the Fukushima Daiichi power plant via underground pipe).

125. UNCLOS, *supra* note 2, art. 1(4) (defining "pollution of the marine environment" as: the introduction by man, directly or indirectly, of substances . . . into the marine environment, . . . which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities).

126. *See Handling of ALPS Treated Water [Overview]*, *supra* note 84, at 5, 7 (illustrating Japan's discharge into the sea plan); *see also Undersea Tunnel to Discharge Fukushima Daiichi Water*, WORLD NUCLEAR NEWS (Aug. 26, 2021), https://www.world-nuclear-news.org/Articles/Undersea-tunnel-to-discharge-Fukushima-Daiichi-wat (describing TEPCO's discharge plan as one that requires that tritiated wastewater be diluted using seawater from outside the adjacent harbor; then, once the tritiated wastewater is diluted to "safe" levels, the treated wastewater will be discharged via an undersea tunnel dug through bed-rock. The tunnel will release the wastewater into an area of the ocean far from the nuclear plant and far from fishing areas).

127. *See Handling of ALPS Treated Water [Overview]*, *supra* note 84, at 5, 7 (explaining the details of the discharge plan).

128. *See* UNCLOS, *supra* note 2, art. 1(4) (defining "pollution of the marine environment").

129. *Id.*

tritiated water into the Pacific Ocean violates Japan's obligations under UNCLOS because under UNCLOS's broad definition of "deleterious effects," the release may harm marine life, human health, and access to marine activities.[130]

Although, scientific evidence studying the harm tritiated water poses to marine life is limited, tritiated water may still pose deleterious effects under UNCLOS Article 1(4).[131] Because of the broad definition of UNCLOS Article 1(4), the absence of extensive scientific evidence regarding the potential polluting effects of tritiated water on marine life is not dispositive.[132] In the absence of any conclusive empirical evidence touting ALPS-treated, tritiated wastewater as safe for the environment, TEPCO and Japan cannot

130. *Id.*; *see* Tim Deere-Jones, *Tritiated Water and the Proposed Discharges of Tritiated Water Stored at the Fukushima Accident Site*, MARINE RADIOACTIVITY RES. & CONSULTANCY 1, 10 (2018), http://www.cnic.jp/wp/wp-content/uploads/2018/08/FUKUSHIMA-tritiated-water-releases-final.pdf ("emerging empirical evidence contradicts the long held industry hypothesis and strongly indicates that marine discharged tritium is of major dosimetric significance, and that doses to humans living in coastal terrestrial environments at least 10 miles inland are highly likely to be delivered . . . "); *see, e.g.*, *Monitoring Fukushima Radiation on Land and Sea*, WORLD NUCLEAR NEWS (Jul. 30, 2021), https://www.world-nuclear-news.org/Articles/Monitoring-Fukushima-radiation-on-land-and-sea (studying the effects of radionuclides on snake and reptile populations, researchers determined that radioactivity impacts reptiles). *But see*, *IAEA Ready to Support Japan on Fukushima Water Disposal, Director General Grossi Says*, INT'L ATOMIC ENERGY AGENCY (Apr. 13, 2021), https://www.iaea.org/newscenter/pressreleases/iaea-ready-to-support-japan-on-fukushima-water-disposal-director-general-grossi-says (stating that "water disposal [will be] carried out without an adverse impact on human health and the environment"); U.S. FOOD & DRUG ADMIN., FDA RESPONDS TO THE FUKUSHIMA DAIICHI NUCLEAR POWER FACILITY INCIDENT (2021) (reporting that tritium presents an extremely low human and animal health risk if consumed); *Japan Briefs Embassies on Planned Release of Contaminated Water From Fukushima Plant Into Ocean*, JAPAN TIMES (Feb. 3, 2020), https://www.japantimes.co.jp/news/2020/02/03/national/japan-embassies-fukushima-water-ocean/#.Xjg1cDd7lz8 (Japan's Ministry of Economy, Trade and Industry assert that the health risks to humans would be significantly small).

131. *See, e.g.*, Karen N. Scott, *International Regulation of Undersea Noise*, 53 INT'L & COMP. L.Q. 287, 293 (2004) (concluding that undersea noise was a substance that caused a deleterious effect under UNCLOS Article 1(4)).

132. *See id.* ("[T]o prevent the application of fundamental environmental obligations to sources of pollution primarily on the basis that they had not been identified as pollution . . . frustrates the object and purposes of UNCLOS and itself").

claim that tritiated water is a substance unlikely to cause a deleterious effect on the marine environment.[133]

Japan's policy also constitutes "pollution of the marine environment" because the release of tritium into the marine environment may pose hazards to human health.[134] Generally, tritium exposure poses health risk to humans if inhaled, ingested, or absorbed into the body through skin.[135] In humans, when tritium is ingested, it releases radiation internally.[136] Long-term exposure to low-level radiation like that produced by decaying tritium may become highly concentrated in living matter and cause severe biological consequences.[137] Thus, the primary human health concerns pertaining to tritium exposure are cancer, hereditary and generational

133. *See Handling of ALPS Treated Water [Overview]*, *supra* note 84, at 10 (in the absence of scientific research, and to ease concerns about the release of tritiated water in to the Pacific Ocean, TEPCO plans to raise and study fish, shellfish, and seaweed in seawater containing ALPS-treated, tritiated water); *see, e.g.*, Junko Horiuchi, *FOCUS: Fukushima Plant Water Release to Prolong Seafood Safety Woes*, KYODO NEWS (Apr. 13, 2021), https://english.kyodonews.net/news/2021/04/c3bc2e88eb76-focus-fukushima-plant-water-release-to-prolong-seafood-safety-woes.html (reporting that because the total catch of fish off Fukushima in 2020 remained less than 20 percent of that in 2010 (a year before the accident), it is wrong for the government to say that tritium-containing water poses little risk to human and marine health when it is not proven).

134. *See Health Effects, Dosimetry and Radiological Protection of Tritium (Apr. 2010)*, online: Canadian Nuclear Safety Comm'n https://www.nrc.gov/docs/ML1029/ML102990093.pdf (stating that the primary radiation protection concern is cancer or hereditary effects, but at higher doses tritium can cause deterministic effects and even death); *see also* David Biello, *Is Radioactive Hydrogen in Drinking Water a Cancer Threat?*, SCI. AM. (Feb. 7, 2017), https://www.scientificamerican.com/article/is-radioactive-hydrogen-in-drinking-water-a-cancer-threat ("Cancer is the main risk from humans ingesting tritium. . . . Some evidence suggests the kind of radiation emitted by [decaying] tritium . . . is actually more effective at causing cancer than high-energy radiation such as gamma rays").

135. Canadian Nuclear Safety Comm'n, *supra* note 134, at 5.

136. Institut de Radioprotection et du Surete Nucleaire, Radionuclide Fact Sheet Tritium and the environment 2010, p. 14. https://www.irsn.fr/EN/Research/publications-documentation/radionuclides-sheets/environment/Pages/Tritium-environment.aspx.

137. *Id.* (finding that in some studies, the radiation emitted from decaying tritium caused DNA lesions that present as changes to the living organism's behavior, reproduction, or genes; whereas, in other studies, the DNA lesions caused by exposure to tritium increased the risk that genetic mutations could be transmitted more easily between generations).

effects, and in extreme cases, death.[138]

Finally, TEPCO's plan to discharge water into the Pacific Ocean constitutes pollution of the marine environment because it will hinder marine activities, including fishing and tourism.[139] UNCLOS Article 1(4) states that when a substance causes a "hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities" the substance has a deleterious effect.[140] In this case, TEPCO's plan to discharge tritiated water into the Pacific Ocean will hinder marine activities because the policy furthers the social stigma and reputational damage associated with the fish and beaches surrounding the Fukushima Daiichi nuclear plant, which will harm the already damaged fishing and tourism industries.[141] As a result, Japan's policy to release tritiated water into the Pacific Ocean hinders local industries that are reliant on the marine environment

138. *See* Canadian Nuclear Safety Comm'n, *supra* note 134, at 5 (to date, the only reported deaths associated with tritium exposure are the deaths of two Russian workers in 1953).

139. *See ALPS Treated Water Report*, *supra* note 41, at 30 (highlighting the social impact of Japan's decommissioning policy on tourism and fishing industry); *see, e.g.*, Horiuchi, *supra* note 133 (emphasizing how Japan's decommissioning plan continues to injure the already struggling local fishing industry); *Japan to Support Fish Industry If Controversial Release of Treated Radioactive Water Damages Sales*, XINHUA NET (Aug. 24, 2021), http://www.news.cn/english/2021-08/24/c_1310145724.htm (demonstrating that Japan's decommissioning plan has harmed the local fishing industry so substantially that Japan plans to provide financial assistance).

140. UNCLOS, *supra* note 2, art. 1(4).

141. *See ALPS Treated Water Report*, *supra* note 41, at 30 (assessing which industries will be most affected by social influence, the Japanese government claimed that the fishery industry may be affected since the discharge path is the ocean; additionally, part of the tourism industry, such as organizations catering to beachgoers may be influenced by social concern; finally, because of concerns over local food stuffs, there may be an avoidance of sightseeing and as a result, the lodging industry, the restaurant industry, public transportation and other industries may experience a downturn); *see, e.g.*, XINHUA NET, *supra* note 139 (concluding that the reputational damage from the Japanese government's decision to release treated radioactive water has damaged sales of marine produces so significantly that the Japanese government will purchase marine products as an emergency measure to support local fishermen); *see also* Horiuchi, *supra* note 133 (explaining that since the Fukushima Daiichi accident, local fisherman have tried to convince consumers that the fish are safe, but struggle in the face of reputational obstacles).

from using the ocean for fishing or other legitimate uses.[142] Accordingly, under UNCLOS Article 1(4), Japan's policy to release tritiated wastewater into the ocean constitutes "pollution of the marine environment."[143]

Japan's policy to release tritiated wastewater into the Pacific Ocean also violates Japan's obligations under UNCLOS Article 207, which describes Japan's responsibilities to prevent pollution of the marine environment from land-based sources.[144] Under UNCLOS Article 207(1), states are required to "adopt laws and regulations to prevent, reduce and control pollution of the marine environment from land-based sources."[145] However, Japan's policy does not prevent, reduce, or control pollution in the marine environment because Japan will be actively introducing tritiated wastewater into the Pacific Ocean for the next thirty to forty years.[146]

Japan's nuclear waste disposal policy also violates its obligations under UNCLOS Article 207(2) because Japan was presented with alternative waste disposal methods that did not require polluting the marine environment, but chose to discharge pollution into the sea.[147] UNCLOS Article 207(2) establishes that "[s]tates shall take other measures as may be necessary to prevent, reduce and control . . . pollution."[148] In this case, TEPCO was presented with many alternative wastewater disposal methods, including: geosphere

142. *See ALPS Treated Water Report*, *supra* note 41, at 30 (delineating each industry that will be and currently is impacted by Japan's discharge into the sea policy).

143. *See* UNCLOS, *supra* note 2, art. 1(4).

144. *See id.* art. 207.

145. *See id.* art. 207(1); *see also Handling of ALPS Treated Water [Overview]*, *supra* note 84, at 5, 7 (evidencing that ALPS-treated, tritiated water will enter the marine environment from a land-based source).

146. *See Handling of ALPS Treated Water [Overview]*, *supra* note 84, at 5, 7.

147. *See* UNCLOS, *supra* note 2, art. 207(2); *see, e.g.*, *ALPS Treated Water Report*, *supra* note 41, at 6–7 (the Japanese Government's Tritiated Water Task Force measured the duration, cost, scale, creation of secondary waste and regulatory feasibility of alternative disposal methods, including: geosphere injection, discharge in the sea, vapor release, hydrogen release or underground burial); *ALPS Treated Water Report*, *supra* note 41, at 15 (Japan also considered the creation of more storage tanks, but cited issues related to time, coordination and buy-in from local municipalities).

148. UNCLOS, *supra* note 2, art. 207(2).

injection, vapor release, hydrogen release, or underground burial.[149] Instead, Japan decided unilaterally to release the tritiated wastewater into the ocean.[150] Given that Japan was presented with other alternative measures that prevented, reduced, and controlled the introduction of pollution into the marine environment, but chose to discharge pollution into the sea, Japan violated its obligations under UNCLOS Article 207(2).[151]

By unilaterally deciding upon its discharge policy, Japan failed to harmonize its policies with those used at the regional level.[152] UNCLOS Article 207(3) requires that states "endeavor to harmonize their policies in this connection at the appropriate regional level."[153] The term "endeavor" indicates that Article 207(3) is not a mandatory obligation, but an obligation in which an alleged good faith effort is required.[154] Although Article 207(3) does not specify exactly how a state is to harmonize its policy with those that have been established at the appropriate regional level,[155] it is evident that Japan's policy does not comport with regionally established norms because (1) its policy violates conditions established in Japan's bilateral and multilateral agreements with its neighbors;[156] (2) Japan's neighbors

149. *ALPS Treated Water Report*, *supra* note 41, at 6.

150. *See* JAPAN TIMES, *supra* note 130 (briefing other countries about Japan's discharge into the sea plan without consulting them first).

151. UNCLOS, *supra* note 2, art. 207(2); *see ALPS Treated Water Report*, *supra* note 41, at 6–7.

152. *See* UNCLOS, *supra* note 2, art. 207(3); *see also* Christopher C. Joyner & Elizabeth A. Martell, *Looking Back to See Ahead: UNCLOS III and Lessons for Global Common Law*, 27 OCEAN DEV. & INT'L L. 73, 77 (1996) (stating that UNCLOS Article 207(3) does not establish specific provisions aimed at protection, but rather establishes general principles that UNCLOS upholds by directing states to enact national laws to protect the marine environment and by directing states to work within regional and global institutions to preserve the marine environment).

153. UNCLOS, *supra* note 2, art. 207(3).

154. *See* Bradford Mank, *Can Plaintiffs Use Multinational Environmental Treaties as Customary International Law to Sue under the Alien Tort Statute*, 2007 UTAH L.R. 1085, 1160 (2007) (citing Daud Hassan, *International Conventions Relating to Land-Based Sources of Marine Pollution Control: Applications and Shortcomings*, 16 GEO. INT'L ENV'T L.R. 657, 670 (2004)).

155. *See id.* (criticizing UNCLOS for leaving states with very wide discretion to adopt their own laws and to set national standards which are "uncontrolled by any internationally agreed criteria").

156. *See Northwest Pacific Action Plan (NOWPAP)*, U.N. ENV'T PROGRAMME, https://www.unep.org/nowpap/who-we-are (The Action Plan for the Protection,

have stronger national laws against pollution by land-based sources than Japan;[157] and (3) the policy violates regional agreements to which Japan is not a party.[158] As a result, Japan failed to "endeavor to

---

Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region (NOWPAP) was adopted by Japan, the Republic of Korea, the People's Republic of China, and the Russian Federation with the overall goal of establishing the wise use, development and management of the coastal and marine environment so as to obtain the utmost long-term benefits for human populations of the region, while protecting human health, ecological integrity and the region's sustainability for future generations. Importantly, NOWPAP provides states with policy guidance and helps them make decisions, however, Japan failed to harmonize its policy with NOWPAP. Implementation of NOWPAP also contributes to the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) in the Northwest Pacific Region).

157. *See, e.g.*, Conservation of Marine Environment, Ministry of the Env't, https://www.env.go.jp/en/earth/marine/conservation.html (Japan's Marine Pollution Control Law was established in 1970 and amended in 1976 to include provisions for maritime disasters, also known as "the Law relating to the Prevention of Marine Pollution and Maritime Disaster" (LPMP). After the London Convention in 1980, the LPMP and the Waste Disposal and Public Cleansing Law (WDPCL) regulated the disposal of wastes at sea in Japan. In 1990, the International Convention on Oil Pollution Preparedness, Response and Co-operation was adopted and integrated into national law; However, none of these national laws included any provisions regulating or restricting land-based pollution of the marine environment); Zhang Chun, *China's Marine Governance Reshuffle, Three Years On*, CHINA DIALOGUE OCEAN (Sept. 27, 2021), https://chinadialogueocean.net/18692-china-marine-governance-reshuffle-three-years-on (China's Ministry of Ecology and Environment recently drafted a five year plan for marine environmental protection that expands upon China's 2018 ministerial reforms); Jiang Yifan, *14th Five Year Plan: China's Carbon-Centered Environmental Blueprint*, THE THIRD POLE (Apr. 13, 2021), https://www.thethirdpole.net/en/climate/14th-five-year-plan-chinas-carbon-centred-environmental-blueprint (China's plan will bolster controls of land-sourced ocean pollution by unifying management of the plan under the Ministry of Ecology and Environment (MEE) and by capping the amount of land-sourced pollutants allowed in waterways. In five years, the MEE will analyze water quality, marine life and habitats, and the restoration of coastlines to improve the environment in China's waters); Hae Yang Hwang Yeong – Gwan Li Beob [Marine Environmental Management Act], Art. 23 (Act No. 11690, 2013) (R.O. Korea) ("No person shall discharge any land-based waste into the sea: Provided, That the Minister of Oceans and Fisheries may allow wastes prescribed by Ordinance of the Ministry of Oceans and Fisheries, the land disposal of which is impracticable, to be discharged into the sea in conformity with the disposal criteria and method prescribed by Ordinance of the Ministry of Oceans and Fisheries. . . .").

158. *See East Asian Seas*, U.N. ENV'T PROGRAMME, https://www.unep.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/regional-seas-

harmonize" its discharge policy with regional standards, and is thus in violation of UNCLOS Article 207(3).[159]

Japan's policy to release tritiated wastewater in the Pacific Ocean in 2023 violates UNCLOS Article 207(4) because Japan failed to establish and uphold global rules and standards or recommended practices that would prevent, reduce, and control pollution of the marine environment.[160] Under UNCLOS Article 207(4), Japan "shall endeavor to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control pollution of the marine environment from land-based sources."[161] Like Article 207(3), Article 207(4) requires that states "endeavor" to establish global or regional rules, indicating that states only have an obligation to *endeavor* to establish rules—not to actually do so.[162] In this case, Japan does not endeavor to establish global or regional rules, but rather, actively contravenes established global and regional rules.[163] Because Japan did not endeavor to establish global or regional rules, but actively decided to ignore established global and regional agreements, Japan violates its obligations under UNCLOS Article 207(4) when it plans to release

programmes/east-asian (The Coordinating Body on the Seas of East Asia (COBSEA) is a regional intergovernmental mechanism to which Cambodia, the People's Republic of China, Indonesia, the Republic of Korea, Malaysia, the Philippines, Thailand, Singapore, and Vietnam are members of. COBSEA was developed to protect the marine environment and coastal areas of East Asian Seas with activities now focused on addressing land-based pollution and sharing marine environmental management responsibilities).

159. *See* UNCLOS, *supra* note 2, art. 207(3).

160. *See id.* art. 207(4).

161. *Id.* art. 207(4).

162. *Id.* art. 207(4); *see* Mank, *supra* note 154, at 1161 (Article 207(4) declares that "States 'shall endeavor' to develop global and regional rules addressing land-based pollution, but allows those regulations to 'take into account . . . the economic capacity of developing States" minimizing States obligations to reduce land-based pollution).

163. *See* JAPAN TIMES, *supra* note 130 (emphasizing that Japan did not negotiate with neighboring countries to decide upon a waste disposal policy, but instead briefed these countries after deciding to discharge tritiated wastewater into the Pacific Ocean); *see also* Zhiguo & Jiangtao, *supra* note 111 (explaining that Japan ignored the doubts and objections of neighboring countries and the international community when it made its unilateral decision to discharge contaminated radioactive wastewater into the Pacific Ocean).

tritiated wastewater into the Pacific Ocean.[164]

ii. Case Law

Japan's policy violates the plain language of UNCLOS Article 207; however, the *MOX Plant Case*[165] demonstrates the limits of enforcing UNCLOS against polluters.[166] In the *MOX Plant Case*, Ireland commenced an action against the United Kingdom to prevent the construction and operation of a mixed oxide fuel (MOX) plant at the Sellafield nuclear plant in the northwest of England, about 112 miles away from the coast of Ireland.[167] Under UNCLOS, Ireland sought to settle its dispute with the United Kingdom in the International Tribunal for the Law of the Sea (ITLOS).[168] Ireland requested that ITLOS grant Ireland a provisional measure[169] preventing the United Kingdom from operating the Sellafield plant from constructing the MOX plant and discharging radioactive materials from the plant.[170] However, because ITLOS determined that Ireland could not prove that the harm caused by the MOX plant was "serious" or "urgent," ITLOS refused to issue a provisional measure enjoining the construction and operation of the MOX plant.[171] Instead, ITLOS issued a positive provisional measure that

164. *See* UNCLOS, *supra* note 2, art. 207(4).

165. The MOX Plant Case (Ir. v. U.K.), Case No. 10, Provisional Measures, Order of Dec. 2, 2002, 2001 ITLOS Rep. 95 https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_10/published/C10-O-3_dec_01.pdf.

166. *See id.* (showing that the court did not regard the case with urgency).

167. Robin Churchill & Joanne Scott, *The MOX Plant Litigation: The First Half-Life*, 53 INT'L & COMPAR. L.Q. 643 (2004).

168. *See id.* at 647, 649.

169. *See* Tanaka Yoshifumi, *Provisional Measures Prescribed by ITLOS and Marine Environmental Protection*, 2014 AM. SOC'Y OF INT'L L. 365, 366 ("provisional measures" may be divided into two groups: (1) are non-aggravation measures which require the parties in dispute to refrain from doing an action; and, (2) are positive measures which seek to require both parties to take action).

170. *The MOX Plant Case*, 2001 ITLOS Rep. at 101; Churchill & Scott, *supra* note 167, at 650.

171. Churchill & Scott, *supra* note 167, at 650–51; Maki Tanaka, *Lessons from the Protracted MOX Plant Dispute: A Proposed Protocol on Marine Environmental Impact Assessment to the United Nations Convention on the Law of the Sea*, 25 MICH. J. OF INT'L L. 337, 383 (2004); *see* Ahn Nguyen, *A Case of MOX Plant 2.0 in the Pacific?*, VÖLKERRECHTSBLOG (May 6, 2021), https://voelkerrechtsblog.org/a-case-of-mox-plant-2-0-in-the-pacific (the ITLOS

prescribed that the parties work together in exchanging information, monitoring, and preventing pollution.[172] That case is informative because the provisional order makes clear that ITLOS will not enjoin a polluter from releasing nuclear waste into a shared body of water, unless the radioactive discharge presents an urgent and serious risk of irreparable harm to the marine environment.[173]

Unlike the *Mox Plant Case*, Japan's plan posits that decommissioning Fukushima will require releasing tritiated wastewater into the Pacific Ocean for at least thirty to forty years.[174] Additionally, the tritiated wastewater Japan plans to discharge has a half-life of 12.3 years, which is shorter than the fourteen to thirty year half-life in the radionuclides in the MOX case.[175] This shorter half-life may indicate that tritiated water releases more intense radioactivity over a shorter amount of time, which may heighten risks to humans and the environment.[176] Because tritiated water may pose a more urgent risk because of its short half-life than the risk posed by the radionuclides in the MOX case, a court may rule differently than ITLOS in the *MOX Plant Case* and enforce UNCLOS against Japan.[177]

Further, Japan plans to release the tritiated water into the Pacific Ocean—far from neighboring states—whereas in the MOX case, Stellafield discharged radionuclides into a shared body of water 112 miles off the coast of Ireland.[178] Japan's discharge into the sea will occur farther from the coast; therefore, other affected states may have more difficulty proving urgent and serious harm resulting from

found that radioactive discharges from the MOX plant only contained small amounts of plutonium-241 and cesium-137 with half-lives of 14 years and 30 years respectively. Based on this finding, the ITLOS found that half-lives of 14 years and 30 years were to be considered "an extremely long half-life;" therefore, injury was not urgent or imminent).

172. Churchill & Scott, *supra* note 167, at 650–51.

173. Tanaka, *supra* note 171, at 391.

174. *Mid-and-Long-Term Roadmap*, *supra* note 65, at 13.

175. Nguyen, *supra* note 171.

176. *Id.*

177. *See id.*

178. Churchill & Scott, *supra* note 167, at 643; *Handling of ALPS Treated Water [Overview]*, *supra* note 84, at 5, 7.

Japan's plan.[179] Although urgent and serious harm may be difficult to prove, the *MOX* case is informative because it affirms that if an injured state can provide evidence that Japan's discharge policy will inflict an urgent and serious harm, ITLOS may provide an injured state a legal remedy.[180]

C. JAPAN'S POLICY VIOLATES CUSTOMARY INTERNATIONAL LAW

Japan's plan to intentionally release tritiated wastewater into the Pacific Ocean violates customary international law.[181] Provisions in UNCLOS are customary international law because, based on general and consistent practices of states, most states treat the intentional pollution of the marine environment as a violation of a state's legal obligations.[182] In this case, pollution by land-based sources violates customary international law, as evidenced by the decisions of international and national judicial and arbitral tribunals, state pronouncements of international law, and the observance of similar international agreements.[183] Because Japan's discharge policy ignores states' general and consistent practice of refraining from intentionally releasing nuclear wastewater into the ocean, Japan flouts its legal obligations under customary international law.[184]

UNCLOS is considered customary international law in many judicial and arbitral tribunals, and Japan's violation of UNCLOS is

179. *See* Zhiguo & Jiangtao, *supra* note 111.

180. *See* Tanaka, *supra* note 171, at 391.

181. *See* Donald Baur & Suzanne Ludicello, *Stemming the Tide of Marine Debris Pollution: Putting Domestic and International Control Authorities to Work*, 17 ECOLOGY L.Q. 71, 93 (1990) (confirming that UNCLOS is widely accepted as a codification of customary international maritime law and carries considerable moral force); *see also* Raechel Anglin, *International Environmental Law Gets Its Sea Legs: Hazardous Waste Dumping Claims Under the ATCA*, 26 YALE L. AND POL'Y REV. 231, 243 (2007) (recognizing that UNCLOS amounts to customary law and thus is a law of nations).

182. *See* Anglin, *supra* note 181, at 255 (establishing an international consensus that waste should be disposed of in an environmentally sound manner).

183. *See* RESTATEMENT (THIRD) OF FOREIGN REL. L. § 103 (providing that determining whether a rule is international customary law requires according substantial weight to judgments of international and national tribunals, the writings of scholars and state pronouncements).

184. *See id.* § 102 (providing that a violation of the general and consistent practices of states amount to a violation of customary international law).

therefore also a violation of customary international law.[185] In the United States, courts previously held that UNCLOS codifies international law and that violations of UNCLOS are violations of customary international law.[186] U.S. courts confirmed that principles codified in UNCLOS are customary international law, which apply to every state regardless of whether that state is a party to UNCLOS.[187] Therefore, Japan's policy contravenes customary international law as determined by judicial and arbitral tribunals when Japan's policy violates its obligations under UNCLOS.[188]

Based on state pronouncements or other diplomatic and public acts, UNCLOS constitutes customary international law and Japan's violation of UNCLOS is therefore a violation of customary international law.[189] Many states and regional bodies have declared their mission of protecting the marine environment from land-based pollution.[190] Although these declarations are technically non-binding,

185. *See, e.g.*, *Sarei v. Rio Tinto*, 221 F. Supp. 2d 1116, 1131 (C.D. Cal. 2002) (recognizing that even if the United States is not a party to UNCLOS, the court must incorporate UNCLOS into its holding to the extent that UNCLOS is customary international law); *Flores v. S. Peru Copper Corp.*, 406 F.3d 65, 88 (2d Cir. 2003) (concluding that principles embodied in a treaty, which is ratified by an overwhelming majority of stats, evidences the customs and practices of those States).

186. *See, e.g.*, *Sarei*, 221 F. Supp. 2d at 1131 (holding that ratification of UNCLOS by at least 166 countries was sufficient for it to codify customary international law); *Flores*, 406 F.3d at 88 (concluding that "treaties . . . are proper evidence of customary international law because, and insofar as, they create legal obligations").

187. *See* G.A. Sarpong, *The Marine Pollution Problem: Some Lessons from UNCLOS*, 23 ENV'T POL'Y AND L. 87, 95 (1993) (explaining that once state practice becomes customary international law, states that are parties to a treaty (here, UNCLOS), and those few that are not, have similar requirements for compliance with the customary international law).

188. *See* RESTATEMENT (THIRD) OF FOREIGN REL. L. § 103 (providing that in determining whether a rule has become international law weight is given to the opinions of international and national tribunals).

189. *See id.* § 103 (deciding whether a rule constitutes international law requires giving weight to state pronouncements and declarations).

190. *Accord Odessa Ministerial Declaration*, BSERP, http://archive.iwlearn.net/bsepr.org/Text/BlackSea/BSOdessa.htm (last updated Sept. 10, 2010) (stating that "[the Odessa] Declaration was a pragmatic and innovative policy statement that set environmental goals and a time frame to guide management regimes and associated investments. . . . The Declaration was designed to provide . . . a process for . . . coordinated national action towards common goals at present and in the

many states have acknowledged and abided by these declarations with the force of law.[191] These declarations evidence that pollution of the marine environment from a land-based source violates customary international law.[192] Consequently, Japan's policy to release ALPS-treated, tritiated water into the Pacific Ocean is inconsistent with state practice against pollution of the marine environment from land-based sources and is therefore in violation of customary international law.

Releasing tritiated wastewater into the Pacific Ocean violates customary international law because, in addition to violating express rules set out in UNCLOS, the release violates similar clear and unambiguous rules set forth in other treaties.[193] Although Japan is not

---

future. . . . A report commissioned by UNEP evaluated to what extent the Odessa Declaration ha[d] succeeded to serve as an agenda for implementation of regional measures," and discovered that The Odessa Declaration was successful in showing that the Black Sea countries were willing and able to cooperate on restoring and protecting the shared environment); *see, e.g.*, Convention on the Protection of the Black Sea Against Pollution art. VII, Apr. 21, 1992, (1993) 32 I.L.M. 1110 [Hereinafter The Odessa Declaration] http://www.blacksea-commission.org/Official%20Documents/The%20Convention/full%20text (Article VII provides that "Contracting Parties shall prevent, reduce and control pollution of the marine environment of the Black Sea from land-based sources . . . which shall form an integral part of this Convention); Harrison, *supra* note 123, at 69–70 (providing information on the Washington Declaration, a non-binding instrument and general political statement on the need to protect and preserve the marine environment from pollution caused by land-based activities); Harrison, *supra* note 123, at 69–70 (providing information on the Global Programme of Action (GPOA), a non-binding instrument established in furtherance of the Montreal Convention that focused on preventing, reducing, and controlling pollution of the marine environment from land-based sources. The GPOA provided guidance on how to address land-based sources of marine pollution and does not dictate what actions a state or region must take. Although GPOA is non-binding, many states involved in the regime treat the GPOA as a legal obligation and hope to establish a bureau to monitor the implementation of GPOA by different governments).

191. *See* Harrison, *supra* note 123, at 86, 88 (stating that contracting parties incorporated non-binding GPOA goals into regional treaties to form a binding legal commitment).

192. *See* RESTATEMENT (THIRD) OF FOREIGN REL. L. § 103 (providing that pronouncements and declarations of states that undertake to state a rule of international law, which are not challenged by other states, may produce a rule of customary international law).

193. *See id.* § 102 ("A rule of international law is one that has been accepted as such by the international community of states . . . by international agreement"); *see also Filartiga v. Pena-Irala*, 630 F.2d 876, 883–84 (2d Cir. 1980) (concluding that

a party to every environmental treaty, the existence of numerous treaties that relate to protecting and preserving the marine environment from land-based pollution indicates that preventing pollution of the marine environment from land-based sources is Japan's obligation under customary international law.[194] As a result, Japan's policy breaches its duty under both UNCLOS and customary international law as determined by different treaties.[195]

---

in order to identify customary international law, the court must look to whether there were numerous other international treaties that set forth clear and unambiguous rules); *Flores v. S. Peru Copper Corp.*, 414 F.3d 233 (2d Cir. 2003) (holding that "treaties . . . are proper evidence of customary international law).

194. *See, e.g.*, *Land-Based Sources of Marine Pollution*, NAT'L OCEANIC AND ATMOSPHERIC ADMIN., https://www.gc.noaa.gov/gcil_land_based_pollution.html (last updated Feb. 8, 2018) (referencing the Convention on the Protection of the Marine Environment of the Baltic Sea Area, Mar. 18, 1992, 1936 U.N.T.S. 269, a regional agreement between countries near the North Sea and parts of the Northeast Atlantic and Arctic Oceans that sought to comprehensively prevent, reduce, and control all sources of marine pollution in the region); Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter art. 2, Mar. 24, 2006, 1546 U.N.T.S. 103 [Hereinafter London Protocol] (promoting the effective control of all sources of marine pollution by requiring all fifty-three member states, including Japan, to take effective measures to prevent pollution of the marine environment); Basel Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal Art. 9(1)(e), Mar. 22, 1989, 28 I.L.M. 657, 1673 U.N.T.S. 125 [Hereinafter Basel Convention] (regulating the transboundary movements and management of hazardous wastes for 181 state parties and explicitly provides that "any transboundary movement of hazardous wastes or other wastes that result in deliberate disposal . . . of hazardous wastes in contravention of the Basel Convention shall be deemed illegal traffic," indicating most states have reached an international consensus against polluting); Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management art. 7, Sept. 5, 1997, 2153 U.N.T.S. 303 [Hereinafter the Joint Convention](requiring that radioactive waste management facilities "provide for suitable measures to limit possible radiological impacts on individuals, society and the environment, including those from discharges and uncontrolled releases," and while allowing for controlled releases of nuclear waste material, its emphasis on preventing radiological impacts on individuals and the environment and the fact that eighty-six nations are parties to the treaty further support the conclusion that pollution of nuclear waste is a violation of customary international law).

195. *See* RESTATEMENT (THIRD) OF FOREIGN REL. L. § 102 (providing that a violation of a rule adopted by the international community of states through international agreement is a violation of customary international law).

IV. RECOMMENDATIONS

Japan's policy to discharge tritiated wastewater into the Pacific Ocean in 2023 violates Japan's obligations under UNCLOS and customary international law. To comply with its duty to protect and preserve the environment, Japan should adopt a different nuclear waste policy that does not allow for the disposal of contaminated water into the Pacific Ocean. If Japan does not change its discharge policy and Japan's policy harms neighboring states, affected states must be able to enforce UNCLOS against Japan; therefore, UNCLOS must be expanded to allow for enforcement of Article 207. Finally, to address today's global environmental issues, UNCLOS should be modernized to prioritize the preservation of the environment, not sovereign economic interests.

A. ADOPT A DIFFERENT NUCLEAR WASTE DISPOSAL POLICY

Japan must choose a different available nuclear waste disposal measure to comply with its treaty obligations under UNCLOS Article 192 and Article 207.[196] Japan evaluated many wastewater disposal measures, but eventually decided upon the cheapest measure: a marine discharge policy.[197] Each alternative disposal method presented different challenges; however, despite the challenges associated with each alternative method, each option was technically feasible.[198] As such, Japan should consider geosphere injection[199] or underground burial[200] because each of these options

196. UNCLOS, *supra* note 2, art. 192, art. 207(2).

197. *ALPS Treated Water Report*, *supra* note 41, at 6–7; *see* James Murray, *An Insight into Japan's Contentious Plans to Release Contaminated Water from Fukushima*, NS ENERGY (Apr. 15, 2021), https://www.nsenergybusiness.com/features/fukushima-contaminated-water-plans (reporting that in addition to releasing the water into the sea, a METI panel also examined geosphere injection, vapor release, hydrogen release, and underground burial); *see also* GREENPEACE, *supra* note 4 (statement of Kazue Suzuki) ("Rather than using the best available technology to minimize radiation hazards . . . they have opted for the cheapest option, dumping the water into the Pacific Ocean").

198. *See ALPS Treated Water Report*, *supra* note 41, at 6–7 (assessing the challenges of various plans, including the regulatory feasibility of the plan, the cost, the scale of operation, the production of secondary waste, the duration of the disposal effort, radiation exposure to workers, and others).

199. *See* Matt Herod, *GeoPoll: What Should We Do with Radioactive Waste?*, EGU BLOGS (Feb. 2, 2015), https://blogs.egu.eu/network/geosphere/2015/02/02/

lessens the possibility that nuclear waste will be intentionally or accidentally released into the marine environment.[201]

Additionally, although Japan rejected plans to expand the production of storage tanks outside of the Fukushima Daiichi nuclear plant because of constraints imposed by time, coordination, and the support of local municipalities, Japan must consider expanding its waste storage facilities to prevent polluting the marine environment from a land-based source.[202] Storage tanks are an essential part of Japan's decommissioning effort because they are used to store spent fuel, fuel debris, and the constantly flowing contaminated water.[203] To complete Japan's thirty to forty year period of decommissioning, storage tanks are essential.[204] Because storage tanks are desperately needed now, and for the next thirty to forty years of decommissioning, Japan must invest in more storage tanks both within the Fukushima Daiichi nuclear plant and off-site in local municipalities.[205] Only by installing more storage tanks can Japan

---

geopoll-what-should-we-do-with-radioactive-waste (defining a "geosphere injection" as when waste is buried or injected hundreds of meters underground in an engineered space that is stable and geologically impermeable).

200. *See* Murray, *supra* note 197 (defining an "underground burial" as when the tritiated water is mixed with a cement-based agent and then buried within the confines of a concrete pit).

201. *See ALPS Treated Water Report*, *supra* note 41, at 7 (reporting that geosphere injection and underground burial are wastewater disposal methods that do not produce secondary waste).

202. *See id.* at 15 (reporting on the need for on-site storage tanks during decommissioning procedures); *see also* Rick Steiner, *The Danger of Japan Dumping Fukushima Wastewater into the Ocean*, THE HILL (Apr. 17, 2021), https://thehill.com/opinion/energy-environment/548726-the-danger-of-japan-dumping-fukushima-wastewater-into-the-ocean (constructing more storage tanks to store contaminated water is also the most popular solution among activists who argue that if there is another viable option to dumping that will prevent environmental degradation, the safer option should be prioritized over the cheaper option).

203. *ALPS Treated Water Report*, *supra* note 41, at 15; *see* THE UPDATE OF FUKUSHIMA DAIICHI NPS, MINISTRY OF ECON., TRADE AND INDUS. 9–10 (2021) (finding that the rate of contaminated water generation per day was 540 cubic meters per day in May 2014, but was 140 cubic meters per day in 2020, indicating a decrease in wastewater production).

204. *ALPS Treated Water Report*, *supra* note 41, at 15 (reporting on the need for storage tanks during further decommissioning procedures).

205. *See* Steiner, *supra* note 202 (arguing that more storage and more time will

attempt to defend itself against claims that it failed to take other measures to prevent pollution from a land-based source, as required by UNCLOS Article 207(2).[206]

Finally, to prevent the continued creation of contaminated water, Japan and TEPCO should change the method used to cool down Fukushima Daiichi reactors.[207] To reduce the amount of contaminated water created from cooling the nuclear fuel debris in the reactors at the Fukushima Daiichi power plant, Japan should implement an air-cooling strategy, rather than a water-cooling strategy.[208] Further, once air-cooling is implemented, Japan must make an effort to block underground water leakage.[209] If air-cooling is implemented and underground water is blocked, Japan will create less contaminated water.[210] Thus, Japan will not be able to justifiably breach its obligations under UNCLOS Article 192 and Article 207.

B. EXPAND ENFORCEMENT UNDER UNCLOS ARTICLE 213

Under UNCLOS, states that are parties to UNCLOS cannot

---

allow radioactive elements such as tritium to further decay and be treated with removal technologies).

206. *See* UNCLOS, *supra* note 2, art. 207(2) (requiring states take other measure to prevent pollution of the marine environment); *see also* GREENPEACE, *supra* note 4 (arguing that Japan failed to protect the environment and neglected large-scale opposition and concerns when Japan planned to deliberately contaminate the Pacific Ocean rather than using the best technologies to minimize the radiation hazard by storing the wastewater over the long-term, but other alternatives exist to dispose of the wastewater).

207. *See* Murray, *supra* note 197 (noting that, currently, the volume of contaminated water is continuing to build up at the site because water is still being injected into the plant to cool fuel debris and rain and groundwater have also seeped into the facility); *see generally* Satoshi Sato, *Decommissioning of the Fukushima Daiichi Nuclear Power Station From Plan-A to Plan-B Now, from Plan-B to Plan-C*, GREENPEACE (Mar. 2021), i–52, https://www.greenpeace.org/static/planet4-japan-stateless/2021/03/20cf92ab-decomrep_final2.pdf (assessing three different plans that Japan considered to decommission the Fukushima Daiichi nuclear power plant, eventually concluding that Plan C, which requires changing Japan's method used to cool down fuel debris, is the most viable).

208. Sato, *supra* note 207, at 52.

209. *Id.* (recommending that Japan change its water blockage system from a frozen wall to a moat concept that will isolate the flow of groundwater).

210. *Id.* ("to permanently terminate [the production of contaminated water], it is proposed to change the way to cool the fuel debris from water-cooling to air-cooling and to replace the frozen wall with the moat concept").

enforce Article 213 against a polluter who pollutes from a land-based source because, as Article 213 states, "[s]tates shall enforce their laws and regulations adopted in accordance with UNCLOS Article 207 and shall adopt laws and regulations necessary to implement applicable international rules and standards[.]"[211] Consequently, states are only required to keep themselves in compliance with UNCLOS.[212]

To prevent Japan from violating its obligations under UNCLOS Article 192, Article 213 must be expanded to allow states to enforce UNCLOS against polluters.[213] Article 213 must be amended to resemble Article 216, which allows injured states to avail themselves to different dispute resolution measures when the injured state is a victim of a state's pollution by dumping.[214] Strengthening Article 213 by providing affected states with a basis to avail themselves to different dispute resolution methods will warn polluting states that they may now be held liable for pollution from land-based sources, which may help establish more forceful international and regional rules and standards that help prevent pollution from land-based sources.[215]

Additionally, expanding UNCLOS Article 213 to allow affected states to have an actionable claim when they demonstrate injury

---

211. UNCLOS, *supra* note 2, art. 213.

212. Harrison, *supra* note 123, at 68 (Article 207 falls short of mandating compliance because the drafters wanted to "preserve for themselves" as much freedom of action as possible in balancing environmental protection measures against the needs of their own economies, where land-based pollution generated much of the most harmful pollution).

213. *See* UNCLOS, *supra* note 2, art. 213 (forcing states to enforce their laws and regulations in accordance with UNCLOS Article 213, but not allowing injured states to enforce UNCLOS Article 213 against polluters).

214. *See id.* art. 216 ("(1) Laws and regulations adopted in accordance with this Convention and applicable international rules and standards established through competent international organizations or diplomatic conference for the prevention, reduction and control of pollution of the marine environment by dumping shall be enforced: (a) by the coastal State with regard to dumping with in its territorial sea or its exclusive economic zone or onto its continental shelf ; (b) by the flag State with regard to vessels flying its flag or vessels or aircraft of its registry; (c) by any State with regard to acts of loading of wastes or other matter occurring within its territory or at its off-shore terminals . . . ").

215. *See id.* (describing methods affected states may use to enforce UNCLOS against a polluter).

resulting from land-based pollution will pressure polluters to create better policy for fear of being held liable by injured states. To avoid liability, a polluting state will likely be more inclined to negotiate policies directly with neighboring countries, or indirectly through international organizations.

C. STRENGTHEN UNCLOS TO ADDRESS CONTEMPORARY ENVIRONMENTAL ISSUES

Today, as evidenced by the changing climate, the effects of environmental degradation and pollution may be felt in any state regardless of the pollution's state of origin.[216] To address this issue, an updated UNCLOS or new environmental treaty must account for the downstream effects of a country's pollution on its neighbors, as well as any effects on a state that may evidence material injury resulting from that pollution. Although Article 213 was drafted to safeguard states' economic interests,[217] UNCLOS must be amended to value environmental preservation above a states' economic rights.

As the effects of climate change indiscriminately impact the world regardless of national boarders, environmental issues that affect multiple countries—like pollution of the marine environment by land-based sources—must be resolved multilaterally, not by individual sovereign nations. To adequately address the environmental issues of today, UNCLOS must treat pollution of the marine environment from land-based sources as an issue that impacts the world, not just Japan or Japan's neighbors.

V. CONCLUSION

Since the Fukushima Daiichi nuclear plant was destroyed by a tsunami in March 2011, Japan has struggled to dispose of

216. *See, e.g.*, Alister Doyle, *Islands, Rocks and Tuna: Pacific Nations Draw New Battle Lines Against Rising Seas*, REUTERS (Mar. 10, 2021), https://www.reuters.com/article/us-climate-change-pacific-fishing-trfn/islands-rocks-and-tuna-pacific-nations-draw-new-battle-lines-against-rising-seas-idUSKBN2B3054 (statement of Clive Schofield, "I think there is growing support for the idea that these states who have contributed the least to climate change should not be penali[z]ed first.").

217. *See Land-Based Sources of Marine Pollution*, *supra* note 194.

contaminated water at the plant.[218] With storage tanks expected to fill in the summer of 2022, Japan unilaterally decided to discharge contaminated water into the Pacific Ocean in 2023.[219] Japan's policy to release tritiated wastewater into the Pacific Ocean violates Japan's obligations to protect and preserve the ocean because Japan's policy requires polluting the Ocean from a land-based source.

Under a plain language analysis of UNCLOS, Japan's policy constitutes pollution of the marine environment from a land-based source because Japan's discharge policy requires that large quantities of tritiated water be released into the Pacific Ocean from an undersea tunnel connected to the Fukushima Daiichi plant. Japan's policy also violates customary international law, which acknowledges a state's obligation to protect and preserve the marine environment from pollution. Although Japan's policy violates its obligations under UNCLOS and customary international law, case law indicates that enforcing UNCLOS against Japan would be difficult absent evidence of actual harm.

To comply with its duties under UNCLOS, Japan should change its waste disposal policy; however, if Japan chooses not to, UNCLOS must be expanded to allow for broader enforcement against states involved in land-based pollution. Environmental issues and their effects are increasingly global, which means that the global community must be more involved in a state's unilateral decision to pollute the marine environment because states will ultimately be affected by that pollution. Although this system may infringe on sovereignty rights, UNCLOS must be strengthened to address environmental issues that occur locally, but impact the world's oceans.

218. *See* Rich, *supra* note 5 (explaining that Japan has had difficulty managing contaminated waste water).

219. *See* JAPAN TIMES, *supra* note 130 (explaining Japan's unilateral decision).