

NEW GENERATION OF NUCLEAR WEAPONS AND POWER PLANTS

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The discovery of how to generate and harness nuclear energy has defined the past century of global politics and international security. While there have been key scientific breakthroughs in nuclear technology that have improved people's lives, the detonation of the atomic bomb claimed 110,000 lives in 1945.¹ But civilian casualties and environmental effects are not limited to periods of war. The Chernobyl incident killed just thirty-one people on the day of the disaster, but an estimated 4,000 people may have died from radiation exposure. In fact, the summer after the Chernobyl incident, 40,000 people were hospitalized with acute symptoms of radiation sickness.² More recently, the Japanese government began to dilute the area's radioactive water containing tritium as a form of treatment after the Fukushima Daiichi Nuclear accident in March 2011.³ Though the IAEA has declared that the planned release of treated water from the plant to be "consistent with international safety standards," skepticism about the safety of the water persists. Moreover, the specter of nuclear war is looming once again with Russia's invasion of Ukraine and the discovery that China was building 120 silos for intercontinental ballistic missiles (ICBMs) in the Gobi Desert.⁴ As of January 2023, the Science and Security board of the *Bulletin of Atomic Scientists* has set the doomsday clock to 90 seconds before midnight.⁵

Unfortunately, the international community has not developed adequate responses to these developments, nor have any of the Permanent-5 (Perm-5) members of the Security Council undertaken sufficient steps to dismantle their nuclear weapons. In fact, Perm-5 members are taking advantage of technological advances to create a new generation of nuclear weapons for tactical use. The development of new nuclear power plants also poses several challenges, even as there may be some benefits in terms of

¹ Alex Wellerstein, "Counting the dead at Hiroshima and Nagasaki," *Bulletin of the Atomic Scientists* (August 2020).

² Richard Gray, "The true toll of the Chernobyl disaster," *BBC* (July 2019).

³ "Japan's nuclear power plants in 2023," *Nippon* (August 2023).

⁴ Andrew Krepinevich Jr., "The new nuclear age," *Center for a New American Security* (April 2022).

⁵ John Mecklin, "A time of unprecedented danger: It is 90 seconds to midnight," *Bulletin of the Atomic Scientists*, Science and Security Board (January 2023).

generating “clean” energy.

At this juncture, the international community faces the following questions. How can the UN enforce *binding* provisions in the Nuclear Non-Proliferation Treaty on non-nuclear weapons states (NNWS) and nuclear-weapons states (NWS)? How can the UN deal with aspiring nuclear weapons states and declared nuclear weapons states in a consistent, rather than a piecemeal, manner? How can we ensure the safe storage of nuclear weapons material and nuclear power plants? And how do we address the human security of thousands of anonymous victims of the development of nuclear weapons and energy, i.e., the indigenous communities displaced from their homes?

This issue book discusses three periods of nuclear age which are marked by specific power dynamics, the development of various international instruments, the subsequent challenges and dilemmas, as well as the impact on human security. Some of the developments are spread over multiple periods, but can still be placed in distinct nuclear ages.

Period	Key concerns	Approaches	Instruments	Challenges	Positives	Damages
World War-II to Cold War	Nuclear war between USSR and US Balance peaceful uses with non-proliferation	Deterrence Multilateral non-proliferation	Bilateral arms agreements NPT IAEA safety agreements Exports controls and similar arrangements	India and Pakistan; Israel Chernobyl	Nuclear power plants	Nagasaki / Hiroshima Manhattan Project Indigenous peoples Environment
1989 to 2014	Nuclear inventories of former USSR states	Nuclear-Weapon-Free Zones (NWFZs)	Reduction of nuclear arsenals	Nuclear terrorism North Korea Iran Fukushima	End of Cold War	
2015 to current	Continued balance of peaceful uses with non-proliferation	Nuclear power programme guidance by IAEA	Abrogation of bilateral treaties	North Korea/South Korea conflict Russia/Ukraine	Optimism about nuclear energy	Nuclear debt and reparations

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Table 1. Summary of Key Periods

FIRST NUCLEAR AGE: PRE-WORLD WAR II TO THE COLD WAR

Development of the Nuclear Bomb

At the turn of the 19th century, exponential progress in the understanding of radioactivity and atomic behavior piqued the interest of scientists around the world. It was not until the discovery of nuclear fission on the eve of World War II that practical applications of this new science began developing in earnest. Expanding on James Chadwick's 1932 discovery of the neutron, John D. Cockroft and Earnest T. S. Walton experimented with accelerating protons and bombarding atoms. Meanwhile, German physicists Otto Hahn and Fritz Strassmann completed experiments demonstrating nuclear fission in 1938. Liese Mietner and Otto Frisch were able to calculate that about 200 million electron volts of energy were released in the process of nuclear fission in 1939, which sparked military and energy interests. Niels Bohr, Mietner and Frisch's mentor, proposed a critical relationship between fission and the Uranium-235 isotope, publishing the fission process just two days before the onset of World War II in 1939. Shortly after, Francis Perrin conceived the atomic bomb by fission via the "critical mass of uranium required to produce a self-sustaining release of energy." German-British Rudolf Peierls and German teacher Werner Heisenberg hypothesized and calculated the concept further.⁶ Germany, however, decided that the development of the atomic bomb during World War II was less of a priority, thus their experimentation in the area waned and a nuclear chain reactor was not developed. Russia had been experimenting with nuclear physics at the turn of the century as well. Several scientific research institutes were formed to investigate the uses of radioactive minerals after the 1917 Russian Revolution. By the beginning of World War II, Russian physicists understood nuclear fission and knew there was a possibility of chain reaction that could be useful in military applications. The Russian advancements in nuclear technology were co-opted by Germany for potential military operations during Germany's 1941 invasion. At the onset of the war, physicists in Great Britain, including Frisch and Peierls, hurried research to conceive an atomic bomb. Britain developed the first experimental proof of a chain

⁶ This account is from "Outline History of Nuclear Energy." *World Nuclear Association* (November 2022). Nuclear fission is defined by the International Atomic Energy Agency (IAEA) as "a reaction where the nucleus of an atom splits into two or more smaller nuclei" during a nuclear reaction, which releases a vast amount of energy in the process. See Andrea Galindo, "What is Nuclear Energy? The Science of Nuclear Power." *International Atomic Energy Agency* (November 2022).

reactor and established a greater understanding of how different uranium isotopes behave in nuclear fission, which resulted in the discovery of plutonium. The progress of Britain's physicists culminated in 1941 with two summary reports: "Use of Uranium for a Bomb" and "Use of Uranium as a Source of Power," underlining the great power and responsibility of these advancements.⁷ Americans expanded on British research, pursuing the possibility of greater fissionable materials through the Manhattan Project. In 1943, British Prime Minister Winston Churchill and U.S. President Theodore Roosevelt signed an agreement in which the British gave the U.S. all nuclear technology research reports in exchange for progress reports, effectively giving the U.S. control over production of nuclear weapons during the war. In 1945, the U.S. completed the first atomic bombs and promptly deployed them against Japan. Hiroshima was struck first with a uranium-based bomb and Nagasaki was struck second with a plutonium-based bomb. Japan surrendered to the U.S. just days after, which concluded World War II.

Nuclear Arms Race and the NPT

Countries relentlessly pursued their nuclear arms development during the Cold War. The USSR broke ground on the first gaseous diffusion plant by the end of 1945, and by 1949 had begun working on the hydrogen bomb. Already possessing a nuclear arsenal, the U.S. established the first energy-generating nuclear reactor in 1951. Russia followed suit with the first nuclear power plant at the Institute of Physics and Power Engineering (FEI) in 1954.⁸ Both the U.S. and the USSR developed their first nuclear-powered surface vessels that same year. Nuclear arms proliferation soon extended beyond Russia and the U.S., with the U.S. providing nuclear weapons to the U.K. in 1952 and several other countries acquiring nuclear arms thereafter.⁹ The dropping of the atomic bombs on Nagasaki and Hiroshima resulted in 110,000 deaths, with long-term health defects – such as varying forms of cancer – impacting affected populations for the next ten years. Nevertheless, there was some evidence of the positive uses of nuclear energy. For instance, the U.S., USSR, France, and Canada began to commercialize nuclear power by commissioning private companies to provide energy by the mid-1960s. The Nuclear Non-Proliferation Treaty (NPT) was an attempt to balance several concerns: (1) to make atomic energy available for peaceful purposes and to minimize the possibility that nuclear energy will be turned into material for nuclear weapons; (2) to guarantee security to NNWS from NWS; and (3) to work towards eventual nuclear disarmament.¹⁰

Thus, the NPT allowed for the peaceful use of nuclear energy if states entered a nuclear safeguards agreement with the International Atomic Energy Agency. Article II of the Statute of the IAEA states its objective is to "accelerate and enlarge the contribution of atomic energy to peace, health, and prosperity

⁷ Ibid.

⁸ Ibid.

⁹ Victor W. Sidel and Barry S. Levy, "Proliferation of Nuclear Weapons: Opportunities for Control and Abolition," *National Center for Biotechnology Information*, National Library of Medicine (September 2007).

¹⁰ These discussions originated from President Dwight D. Eisenhower's 1953 address to the U.N. General Assembly titled "Atoms for Peace."

around the world,” as well as to ensure that “assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose.”¹¹ Alongside fostering early discussions on non-proliferation, the IAEA began providing technical assistance and safeguards regarding small scale reactors in the early 1960s.¹² Today, 177 member states have signed safeguards agreements with the IAEA, allowing the agency to monitor their nuclear reactors periodically. The NPT addresses the issue of horizontal proliferation (the acquisition of nuclear weapons by countries that do not have them) through provisions that require NNWS not to provide weapons-grade material to NWS and for NNWS not to receive such material. NNWS have largely adhered to this requirement.¹³ The same cannot be said for the NWS however, who are obligated “to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date” under Article VI of the NPT. The NPT remains in effect today with 189 member states.¹⁴

Nuclear Apartheid?

India and Pakistan refused to sign the NPT, stating that the agreement was tantamount to nuclear apartheid, i.e., the NPT authorized the possession of nuclear weapons by a select group of countries while denying other countries the right to obtain weapons with which to defend themselves. Additionally, Israel never signed the NPT and refuses to neither confirm nor deny possession of nuclear weapons, though the country is suspected to maintain a nuclear arsenal. During this time, the key issue for the international community was the lack of transparency and the fear that potential nuclear powers could use nuclear weapons, as these countries are entangled in rivalrous regional politics within South Asia and the Middle East, respectively.

Development of the Non-Proliferation Regime

The general obligations in the NPT have been supplemented by other agreements which, taken together, form the nuclear non-proliferation regime. The NPT tasks the IAEA with enforcement and periodic review of developments in nuclear technology and disarmament.¹⁵ The international regime on non-proliferation includes the IAEA Comprehensive Safeguards Agreement, the establishment of the Nuclear Suppliers Group and the Zangger Committee. The Nuclear Suppliers Group and the Zangger Committee supervise nuclear export control policies.¹⁶ Several treaties regarding nuclear weapons were signed by the U.S. and U.S.S.R. during the Cold War, beginning with the results of the Strategic Arms Limitation Talks

¹¹ “The Statute of the IAEA.” *International Atomic Energy Agency* (October 23, 1956). The IAEA was actually formed before the NPT entered into effect. See International Atomic Energy Agency. “History.” *International Atomic Energy Agency* (2023).

¹² “Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons.” *United Nations* (2015).

¹³ Sidel and Levy. “Proliferation of Nuclear Weapons.”

¹⁴ “Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons.” *United Nations* (2015).

¹⁵ “Treaty on the Non-Proliferation of Nuclear Weapons (NPT).” *United Nations* (2023).

¹⁶ “Nuclear Suppliers Group.” *NTI* (2023).

(SALT). The Anti-Ballistic Missile Treaty was signed in 1972 as an attempt to control the arms race.¹⁷ The Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles (INF Treaty) was the first bilateral treaty between the U.S. and the U.S.S.R., which was signed in 1987 and remained in effect until the U.S. withdrew in 2019.¹⁸ The INF Treaty was first in its aim to reduce nuclear arms, which was vital to the conclusion of the arms race of the Cold War. Following the INF Treaty were the Strategic Arms Reduction Treaty I (START I) in 1991, the Strategic Offensive Reduction Treaty of 2002, and the New Strategic Arms Reduction Treaty of 2011 (New START).¹⁹ Likewise, other states have taken the initiative to create nuclear-weapons free zones, the first of which was the Treaty of Tlatelolco. Signed in 1969, the treaty bans nuclear weapons in Latin America and the Caribbean. The Treaty of Rarotonga in the South Pacific (1986) followed this.

Nuclear Energy

Nuclear power plays a strong historical role in the transition to clean energy. Utilizing and controlling nuclear energy as a power source has been an evolving desire in the international community since the technology's early developments, especially in regard to creating safe and reliable nuclear power plants. Civil nuclear power became popular following the 1973 oil crisis, which undermined global powers, whose economies heavily relied on oil. Hence, a stronger desire for alternatives outside the influence of OPEC (Organization of Petroleum Exporting Countries) grew. By the end of the 1980s, total installed nuclear capacity worldwide reached 300 gigawatts. Since then, nuclear power plants have become an important source of energy worldwide.

Damages

The damages suffered from the nuclear bombs deployed on Hiroshima and Nagasaki at the conclusion of World War II were massive. The atomic bomb that hit Hiroshima had an explosive yield equivalent to 15,000 tons of TNT.²⁰ Combined, about 100,000 died from direct impact at Hiroshima and Nagasaki, roughly another 100,000 were injured, and more died from direct effects of the injuries sustained or contact with radiation.²¹ The test sites used to detonate nuclear weapons during the Manhattan Project sustained on-site damages from testing accidents and caused the displacement of indigenous people in New Mexico, Washington, and Tennessee.²² Indigenous populations were also displaced for U.S. testing at Bikini Atoll in the Marshall Islands. Casualties within indigenous populations occurred in French Polynesia during bomb testing by the French authorities, wherein no displacement orders were given before testing

¹⁷ Daryl, Kimball, "The Anti-Ballistic Missile (ABM) Treaty at a Glance," *Arms Control Association* (December 2020).

¹⁸ "INF Treaty." *Nuclear Technology Institute* (2023).

¹⁹ Daryl Kimball, "START I at a Glance," *Arms Control Association* (April 2022).

²⁰ Alex Wellerstein. "Counting the Dead at Hiroshima and Nagasaki," *Bulletin of the Atomic Scientists* (August 4, 2020).

²¹ "The Atomic Bombings of Hiroshima and Nagasaki," *AtomicArchive* (2023).

²² "Stories of Displacement," *National Park Service* (2023).

began. The Three Mile Island accident of 1979 was an early failure of a nuclear power plant reactor. The reactor, located in Middletown, Pennsylvania, melted down in part due to equipment malfunction, worker error, and design issues. Fortunately, the release of radioactive material was small and caused no observable health effects.²³ The incident was the most significant nuclear accident at that point, leading to the tightening of safety standards in the U.S. Nuclear Regulatory Commission.

One of the worst nuclear disasters occurred in Ukraine in April 1986. The flawed nuclear reactor design and several human errors in violation of the plant's procedures led to the Chernobyl accident. Without proper coordination or communication, operators ran the plant at very low power, causing unstable conditions against the design of the reactor. This accelerated the nuclear chain reaction and caused an uncontrollable power surge that led to two explosions, a 10-day fire, and a large amount of radiation leaking into the atmosphere. Chernobyl was the only accident in the history of commercial nuclear power with casualties thus far. Thirty-one people died within a week from exposure to radiation, thermal burns, steam explosion, and cardiac arrest. Key moments that led up to the accident lies in the differences between a U.S. and the former USSR's reactor design. The plant structures, standards, regulations and emergency preparation that were held in the U.S. would not permit accidents like Chernobyl to happen. In 2018, the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) reported that about 20,000 cases of documented thyroid cancer in three affected countries including Belarus, Ukraine, and the Russian Federation may be attributed to the Chernobyl accident.²⁴ The UN reports that after the incident, international cooperation in nuclear safety was significantly strengthened through four safety conventions, two Codes of Conduct, and a globally recognized emphasis of IAEA Safety Standards.²⁵

SECOND NUCLEAR AGE: THE END OF THE COLD WAR TO 2015

The end of the Cold War ushered in an era of optimism that nuclear disarmament would occur. Indeed, between 60,000 to 65,000 nuclear warheads were reduced to under 13,000 worldwide by 2023.²⁶ More Nuclear-Weapon-Free Zone (NWFZ) agreements were signed, such as the Treaty of Bangkok (Southeast Asia), the Treaty of Pelindaba (Africa), and the Treaty on a NWFZ in Central Asia.²⁷ Moreover, steps beyond the NPT to address the issue of nuclear weapons have been taken. The Comprehensive Nuclear-Test-Ban Treaty (CTBT) of 1996, which was the culmination of the 1978 U.N. Conference on Disarmament (CD), specifically "bans all nuclear explosions, whether for military or peaceful purposes," with 186 states having

²³ "Backgrounder on the Three Mile Island Accident," *United States Nuclear Regulatory Commission* (November 15, 2022).

²⁴ "Assessments of the Radiation Effects from the Chernobyl Nuclear Reactor Accident," *United Nations Scientific Committee on the Effects of Atomic Radiation* (2023).

²⁵ "Global Issues: Atomic Energy," *United Nations* (2023).

²⁶ "Number of nuclear warheads worldwide from 1945 to 2022," *Statista*, Statista Research Department (June 2022).

²⁷ "Nuclear-Weapon-Free Zones," *United Nations Office for Disarmament Affairs* (2023).

signed and 178 ratified.²⁸ The states that have not signed the NPT have also not signed the CTBT; while the U.S. and China have signed, they have not ratified the treaty; all other nuclear-weapons states have signed and ratified.²⁹ However, the status of India, Israel, and Pakistan as non-signatories to the NPT but de facto nuclear weapons states continued to bedevil the United Nations. North Korea's withdrawal from the NPT in 2003 further raised concerns.³⁰

Piecemeal Attempts

To date, there is no consistent and uniform way to deal with violations of the NPT by NNWS. While it is necessary to consider the specific contexts of proliferation to assure that responses are carefully calibrated, the lack of some standard guidelines on how to deal with nuclear weapons developments by different countries only serves to fray the fragile threads that bind the NPT together. For example, North Korea's violations of the NPT were addressed through the Agreed Framework which included the U.S., Japan, South Korea, North Korea, China, and Russia. The Joint Comprehensive Plan of Action (JCPOA) included Iran, the U.S., China, France, Germany, Russia, U.K., and the European Union. The provisions in the Agreed Framework were more vague than those in the JCPOA, which put strict measures against Iran up to the allowable level of uranium enrichment.

The biggest problem with these kinds of arrangements is that they are subject to changing political winds. In the Agreed Framework, the U.S. promised to help North Korea construct light-water reactors in return for its dismantling of existing nuclear reactors. But the Republican majority in the U.S. Congress voted against providing the necessary funds for their construction. This led North Korea to blame the U.S. for not keeping its promise and used that as an excuse to revive its nuclear weapons program.³¹ The JCPOA was negotiated under the Obama administration but was withdrawn from by the Trump administration, resulting in Iran's renewed efforts to develop nuclear-weapons grade material.³² On the other hand, the U.S. has entered into several nuclear supply agreements with India – a non-party to the NPT. In 2005, India and the U.S. signed a Civil Nuclear Agreement which recognized India's *de facto* status as a nuclear-weapons state without the need to become a party to the NPT. This unevenness of treatment is one reason why there is a need for baseline standards for dealing with states that either withdrew from, or never signed, the NPT.

Nuclear Terrorism

Following the aftermath of the 9/11 terrorist attack on the U.S, preventing the spread of nuclear weapons materials that terrorists could use to assemble a "dirty bomb" became a key interest. To address

²⁸ The Comprehensive Nuclear-Test-Ban Treaty, "Status of Signature and Ratification," *Comprehensive Nuclear-Test-Ban Treaty Organization* (2023).

²⁹ Ibid.

³⁰ Sidel and Levy, "Proliferation of Nuclear Weapons."

³¹ "Nuclear Negotiations with North Korea." *Congressional Research Service* (May 4, 2021).

³² Knights, Michael. "Reassessing the Iran Deal: An Institute Backgrounder." *The Washington Institute for Near East Policy* (October 11, 2017).

this concern, the General Assembly adopted Resolution 51/210, establishing an ad hoc committee to determine the need for an international treaty. By 2007, the *International Convention for the Suppression of Acts of Nuclear Terrorism* entered into force.³³ 121 states pledged to develop domestic legislation that criminalizes the unlawful possession of radioactive material with the intent to cause substantial damage by individuals. It also emphasized that states will cooperate to prohibit the illegal activities in this regard by providing technical assistance or information exchanges. According to Graham Allison, the “terrorist groups that sought to attack the United States with nuclear weapons have been decimated.”³⁴ However, the fear that malign actors might obtain nuclear material remains.

The Fukushima Daiichi Accident

In 2011, Japan’s Fukushima Daiichi power plant suffered an impact from a tsunami wave as the result of a major earthquake. Most nuclear reactors, like those at Fukushima, use Light Water Reactor (LWR) technology to moderate temperatures during the process of nuclear fission. The tsunami that hit Fukushima disconnected the power supply to the cooling functions of the reactors, which led to the overheating and melting of three out of the six reactors at the plant. While there were no direct deaths correlated to the Fukushima accident itself, 100,000 people were evacuated from the area due to the release of radioactive materials into the environment from the accident’s hydrogen explosions.³⁵ In the months following the disaster, the Fukushima Daiichi’s operating company, Tokyo Power Electric Co. (TEPCO), downplayed the severity of the incident to the Japanese population.³⁶ Since the disaster, the Japanese government has lacked transparency regarding the “nature of the hazards posed by the contaminated water and the impact of its disposal,” leading to grassroots-based approaches to data collection and analysis of radioactivity levels.³⁷ The opacity from the Japanese government and TEPCO has breached the trust of citizens, 40,000 of whom remain displaced by the disaster without being acknowledged as Internally Displaced Persons (IDPs).³⁸ This context lends to the current issue of the re-opening of the Fukushima Daiichi power plant and the government-approved release of the treated wastewater from the original accident into the Pacific Ocean.

THIRD NUCLEAR AGE: 2015 TO THE PRESENT

In 2017, the U.N. introduced the Treaty on the Prohibition of Nuclear Weapons (TPNW), which

³³ “International Convention for the Suppression of Acts of Nuclear Terrorism.” *United Nations* (April 13, 2005).

³⁴ Graham Allison, “Nuclear Terrorism: Did We Beat the Odds or Change Them?” *National Defense University, PRISM*, vol. 7, no. 3. (May 15, 2018).

³⁵ “Fukushima Daiichi Accident,” *World Nuclear Association* (August 2023).

³⁶ The Associated Press, “Fukushima meltdown apology: ‘It was a cover-up,’” *CBS News* (June 21, 2016).

³⁷ Japan must step up efforts to solve human rights fallout from Fukushima disaster: UN experts,” *United Nations, Human Rights Office of the High Commissioner* (March 11, 2021).

³⁸ *Ibid*,

prohibits the development, production, testing, acquisition, possession, stockpiling, use, or threatening of use of any nuclear weapon activity. The treaty was opened for signature in 1968 and entered into force in 1980 with 113 states parties and 92 signatories to the TPNW. However, TPNW lacks participation from Perm 5 members – China, France, Russia, U.K., and U.S. – as well as Iran, India, Pakistan, and North Korea. Commitment to the TPNW would mean that all NWS would “cooperate... for the purpose of verifying the irreversible elimination of its nuclear-weapon programme,” making it the most comprehensive call for disarmament yet.³⁹

Nuclear Weapons: Old and New

Today, U.S., Russia, the U.K., China, France, Pakistan, India, Israel, and North Korea have nuclear weapons, with Russia and the U.S. having the most by a large margin.⁴⁰ In total, the U.S. and Russia have just under 12,000 nuclear warheads amongst each other, while the remaining NWS have under 2,000 collectively.⁴¹ The more disturbing issue, however, is the development of tactical nuclear weapons, which may be easier to use and deadlier. The U.S. developed the B61-12 nuclear gravity bomb in 2021, replacing the B61-3, -4, and -7. The B61-12 is “lower yield, more accurate, and compatible with newer aircraft.”⁴² The U.S. is also in the middle of modernizing all aspects of its nuclear arsenal.⁴³ The Sentinel intercontinental ballistic missile system will replace the Minuteman III, the Columbia class ballistic missile submarine will replace the Ohio class SSBNs, and the B-21 Raider will replace the B-2A Spirit bomber. The Sentinel system is called “next generation nuclear missile,” and is set to reach operational capacity in mid-2030.⁴⁴ Furthermore, Putin threatened to use tactical nuclear weapons against Ukraine last year,⁴⁵ while China, India, and Pakistan are all pursuing new ballistic missiles, cruise missiles, and sea-based nuclear delivery systems.⁴⁶ The lack of transparency around the development of these arsenals has been particularly alarming. So far, the Biden administration has not acted on the requests from the Federation of American Scientists to disclose the numbers for 2021 or 2022 leading undermining the US call for nuclear transparency from Russia and China. It is expected that the U.S.’ complete nuclear modernization (and maintenance) program will continue beyond 2039 and, based on the Congressional Budget Office’s estimate, will cost about 1.2\$ trillion over the next three decades.⁴⁷ Moreover, countries such as Japan and South

³⁹ “Treaty on the prohibition of nuclear weapons.” *United Nations*, Office for Disarmament Affairs (2023).

⁴⁰ “Which countries have nuclear weapons?” *International Campaign to Abolish Nuclear Weapons* (2023).

⁴¹ *Ibid.*

⁴² “B61-12 Life Extension Program,” *National Nuclear Safety Administration* (November 2021).

⁴³ Joseph Clark, “Pentagon Tackling Nuclear Modernization With Proactive, Integrated Approach,” *U.S. Department of Defense*, DOD News (August 25, 2023).

⁴⁴ Stephen Losey, “Next-gen nuclear missile rollout slips on supply chain, software woes,” *C4ISRNet* (June 14, 2023).

⁴⁵ Eleanor Watson, “What are tactical nuclear weapons and how might Putin use them?” *CBS News* (October 12, 2022).

⁴⁶ Kelsey Davenport, “Nuclear Weapons: Who Has What at a Glance,” *Arms Control Association* (June 2023).

⁴⁷ Hans M. Kristensen and Matt Korda, “Nuclear Notebook: United States nuclear weapons, 2023,” *Bulletin of the Atomic Scientists* (January 16, 2023).

Korea have begun expressing interests in developing a nuclear arsenal due to North Korea's continued firing of ballistic missiles towards Japan and North Korea's constant threats against South Korea. Nevertheless, the creation of indigenous arsenals in those countries would destabilize the region and create insurmountable tensions. Thus, no matter how many countries are parties to the NPT, the existing body of agreements have not prevented states from falling back on nuclear deterrence strategies to deal with regional conflicts. In addition, existing arms treaties are becoming more fragile. For example, the START treaty (New Strategic Arms Reduction Treaty) is an agreement for nuclear arms reduction and limits between the US and Russia, but following the treaty has become complicated since Russia's invasion of Ukraine.

Nuclear Energy and New-Generation Nuclear Power Plants (NPPs)

Nuclear power is seen as both a promising and risky solution to global energy demands. Nuclear energy "guarantees electric supply, puts a stop to polluting emissions, reduces exterior energy dependence and produces constant electricity, making it an enticing replacement for fossil fuels."⁴⁸ The development of nuclear energy was part of an economic boom for the Global North developed countries after World War II, but the nuclear power industry stagnated from the late 1970s until the turn of the century. The cause of the stagnation is hypothesized to be political, as investments in other forms of energy have held power and public opinion of nuclear energy has been low due to fear of potential disasters in the future.⁴⁹

Today, nuclear energy looks like an attractive, carbon-free energy source as countries work toward achieving carbon neutrality in the face of the global climate crisis and the global commitment to the United Nations 2030 Sustainable Development Goals (SDGs). The International Monetary Fund (IMF) has called the contemporary return to nuclear energy the "Nuclear Resurgence."⁵⁰ Nuclear energy capacity worldwide is steadily increasing. Today, nuclear power reactors are operating in thirty-two countries, in addition to the Republic of China (or Taiwan). About thirty countries are considering, planning, or starting nuclear power programmes including Turkey, Kuwait, Ethiopia, Cuba, Kazakhstan, Vietnam, and North Korea. In France, Slovakia, and Ukraine, nuclear power provides for more than half of the total electricity production.⁵¹ Most countries with program plans are in the Asian region due to fast growing economies and rapidly-rising electricity demand, though there are major plans for about sixty power reactors that are currently being constructed in fifteen other countries, including China, India, and Russia. Plant lifetime extensions are furthering capacity, particularly in the USA.⁵²

Japan's shift in national policy and attitude toward nuclear energy is indicative of the contemporary resurgence and commitment to SDGs and cooperation with the IAEA. At the end of 2022, just eleven years

⁴⁸ "Nuclear power around the world," *Foro Nuclear* (2023).

⁴⁹ Jake Wilson, "Stagnation of Nuclear Energy," *Stanford University*, PH240 (2021).

⁵⁰ Ted Nordhaus and Juel Lloyd, "Nuclear Resurgence," *International Monetary Fund*, Finance & Development (December 2022).

⁵¹ "Emerging Nuclear Energy Countries," *World Nuclear Association* (April 2023).

⁵² "Plans for New Reactors Worldwide," *World Nuclear Association* (August 2023).

after the Fukushima disaster, Japan unveiled a new policy to “extend the lifespan of nuclear reactors, replace the old and even build new ones,” targeting 20-22% of national energy usage to be derived from nuclear energy by 2030.⁵³ The GX Decarbonization Power Supply Bill was approved in May 2023, improving safety standards with nuclear reactors, specifically around the regulation of aging reactors and the responsibilities of operators.⁵⁴ IAEA released a report concluding that the treated wastewater from the Fukushima Daiichi could be released safely, and the country began releasing the wastewater into the Pacific Ocean under the IAEA’s surveillance in August 2023.⁵⁵ Despite the approval from the IAEA, the public has been skeptical of such handling of Fukushima’s waste, as exemplified by China issuing a ban on all Japanese seafood and other aquatic products.⁵⁶ The direction of Japan’s policy illustrates that, despite the recent national trauma of Fukushima and reactions from neighboring countries, the benefits of implementing safe nuclear technology to meet energy needs have begun outweighing the cons.

Nuclear energy is attractive to developing countries as a potential solution to the lack of electricity in their countries. One of the intended impacts of the IAEA’s guidelines and instructions on implementing national nuclear power programs has been to increase the percentage of developing countries with nuclear energy from the current statistic of 7.1%.⁵⁷ In sub-Saharan Africa, for example, more than 600 million “lack access to electricity, clean cooking fuels, and modern transportation,” illustrating the need for infrastructure and technology development to meet energy needs.⁵⁸ While nuclear energy is not likely to solve all of Africa’s energy demands, it could alleviate some of the disparities in access to electricity. Several countries within Africa have already broken ground on their nuclear programs, including Egypt’s power plant construction, which began in 2022 and is set for completion in 2028.⁵⁹ Ghana and Morocco have operating research reactors and are thought to be ready for nuclear energy by 2030, while Kenya, Namibia, Nigeria, South Africa, Sudan, Tanzania, Uganda, and Zambia have “expressed significant interest in developing nuclear power plants.”⁶⁰ These developments depend on economic stability, national security, and potential technological trades with nuclear power producing states.

The new generations of nuclear power plants are rising in efforts to curb carbon emissions as well address the fluctuations of oil and gas prices. Russia’s 2020 Floating Nuclear Power Plant (FNPP) is an example, presenting an option for coastal and remote regions. The first FNPP was built in the 1960s by the

⁵³ The Associated Press, “After the Fukushima disaster, Japan swore to phase out nuclear power. But not anymore,” *National Public Radio*, Asia (December 22, 2022).

⁵⁴ Nanako Takehara, “GX Decarbonization Power Supply Bill Approved by Committee on Economy, Trade and Industry,” *JAIIF* (May 16, 2023).

⁵⁵ “Japan’s Nuclear Power Plants in 2023,” *Nippon* (August 14, 2023).

⁵⁶ Sakura Murakami, “Fukushima wastewater released into the ocean, China bans all Japanese seafood,” *Reuters* (August 24, 2023).

⁵⁷ B.J. Csik and Kurt Schenk, “Nuclear power in developing countries: Requirements & constraints,” *International Atomic Energy Agency*, IAEA Bulletin, vol. 2 (1987).

⁵⁸ Nordhaus and Lloyd, “Nuclear Resurgence.”

⁵⁹ Jacob Kincer and Jessica Lovering, “2023 Update: Who in Africa is Ready for Nuclear Power?” *Energy for Growth Hub* (February 7, 2023).

⁶⁰ Nordhaus Lloyd, “Nuclear Resurgence.”

U.S., but regulatory and environmental concerns halted further development of FNPPs in the 1970s. Recently, Russia has begun exploring FNPPs again with Small Modular Nuclear Power Reactors (SMRs) to remote locations near the Arctic. FNPPs are considered safer than land-based NPPs, because the LWR technology in most reactors uses water as a coolant and moderator for the fission process. Thus, FNPPs' proximity to water as a coolant should theoretically prevent catastrophic consequences in the event of a power failure halting the cooling system, such as what happened with the Fukushima accident. Questions exist about whether this safety improvement balances the environmental concern of FNPP accidents in open water, since transporting or operating them in challenging waters and busy channels is another safety concern that could result in both human and environmental damage. The rebuttal to the argument that stationary NPPs are safer is that FNPPs' mobility in a moment of crisis is one of their strengths: if the Fukushima NPP had been on a floating platform, could it have avoided its disaster?⁶¹

The interest in SMRs is also burgeoning in Western countries through private investments, indicating a shift from government funding to corporate as these SMRs are billed to have advanced safety standards, be more cost effective, and create less waste. In the U.S., General Electric, Framatome, and Westinghouse are all trying to develop new, accident-tolerant fuels for SMRs in collaboration with the Department of Energy.⁶² These reactors can range in size: as small as one-third the size of a traditional reactor and allow for multiple uses, including power generation with small physical footprints, reduced capital investment, easier accessibility, distinct safeguards, and security and nonproliferation advantages. The Nuclear Regulatory Commission (NRC) is currently reviewing the possible licensing of more developments of these technologies, including the development of light water-cooled SMRs and SMRs that use non-traditional coolants, such as liquid salts as options that can provide safer operating and economic conditions for nuclear power.⁶³

Beyond SMRs, the most ambitious efforts involve thirty-five countries -- including China, the EU, India, Japan, Russia, and the U.S. -- who are collaborating on an international thermonuclear experimental reactor (ITER) conducted by France. Experiments are underway to procure the world's largest ITER called "tokamak," which is a magnetic fusion large-scale device designed to harness nuclear fusion power that is ten times stronger thermal output power than today's power plants.⁶⁴ If the experiment succeeds, ITER will offer a new type of power plant that would produce substantial amounts of electricity with little raw material and little radioactive waste.

⁶¹ Alvin Chew. "Floating Nuclear Power Plants: Option for Coast Regions?" *S. Rajaratnam School of International Studies, RSIS Commentary*, No. 65 (June 2022).

⁶² Ed McGinnis. "3 Innovations Transforming the Nuclear Industry," *U.S. Department of Energy, Office of Nuclear Energy* (June 5, 2018).

⁶³ "Advanced Small Modular Reactors (SMRs)," *U.S. Department of Energy, Office of Nuclear Energy* (2023).

⁶⁴ "What is ITER?" *ITER Organization* (2023).

MOVING FORWARD

Advantages and Disadvantages of Nuclear Energy

The immediate and long-lasting negative effects of nuclear power plant accidents, as seen in the Chernobyl and Fukushima disasters, give reason to caution against the development of nuclear reactors for energy. Thirty-three countries that house 422 existing nuclear reactors generate 10.5% of the globe's electricity.⁶⁵ The IAEA has published instructive guidelines for its member-states to safely and peacefully develop infrastructure for nuclear power, with milestones and safety checkpoints built in.⁶⁶ Included in the IAEA publication are instructions for emergency planning, radioactive waste management, and environmental protection, with the agency providing guidance and supervising the implementation of nuclear programs within member states. Global risks regarding the implementation of nuclear power remain in relation to non-signatory states, non-state actors, and the effects of unforeseeable natural disasters on power plants.

Although non-renewable, nuclear energy has been one of the largest global contributors of carbon-free electricity. Globally, there are approximately 440 operating nuclear reactors. This accounts for 10% of electricity generation and is rising to almost 20% in advanced economies. The potential of carbon-free electricity and the ability to adjust output to accompany shifts in demand and supply, especially as the share of variable renewables like wind and solar photovoltaics (PV) rises, further fuels the international community's interest in the development of nuclear energy sources.⁶⁷ However, with myriad of considerations that a nation needs to consider before implementation of a nuclear power program – large upfront capital costs, the costs of decommissioning, the challenge of waste disposal, competition with low-cost fossil fuels, and the possibility of catastrophic accidents – the ability to obtain and benefit from the long term revenues of reactors are limited.⁶⁸ Power plants struggle to meet the world's rising energy needs while their construction suffers significant delays and additional costs. Furthermore, when a power plant decides to cease operations, safe plant decommissioning costs can vary between \$300 to \$400 million.⁶⁹ Harnessing nuclear power also comes with risks. Although it is a zero-emission clean energy source, it also generates radioactive waste with a lifespan ranging from hundreds to several hundred thousand years. Current technologies do not offer a definitive solution for high-level, long-lived waste. In modern practice, most countries rely on deep geological repositories to store nuclear waste, ranging at

⁶⁵ "Nuclear power around the world." *Foro Nuclear* (2023).

⁶⁶ "Milestones in the Development of a National Infrastructure for Nuclear Power." *International Atomic Energy Agency*, IAEA Nuclear Energy Series, No. NG-G-3.1 (Rev. 1), (2015).

⁶⁷ "Nuclear Power." *International Energy Agency* (2023).

⁶⁸ "Economics of Nuclear Power." *World Nuclear Association*, Information Library (August, 2022).

⁶⁹ "Backgrounder on Decommissioning Nuclear Power Plants." *United States Nuclear Regulatory Commission* (October 17, 2022).

depths from 250 to 5000 meters underground.⁷⁰ Any accidents caused by extreme weather, human malfunctions, or any other accidents could also cause environmental catastrophes. While it is in the best interests of the international community to be able to use nuclear energy as an energy source, it is important to recognize the valid concerns and dangers of the industry and stimulate progress to prevent recurring problems or failures.

Trade-Offs and Reparations

One of the most important, and obvious, trade-offs with the renewed zeal to obtain or modernize nuclear weapons is the financial costs. According to the International Campaign to Abolish Nuclear Weapons (ICAN), the nine nuclear-armed states have increased their arsenals of nuclear weapons by \$44.2 billion US dollars after the Russian invasion of Ukraine, That is equivalent to \$156,000 spent for every minute to maintain nuclear arms in 2021.⁷¹

The testing of nuclear weapons has also had negative impacts on civilian populations near test sites, especially in the case of indigenous populations in colonial territories. The earliest hydrogen and atomic bomb tests done by the U.S. were conducted on the Marshall Islands, specifically at Bikini Atoll, during 1946 to 1958. The inhabitants of the island were told to relocate by U.S. officials and were “exposed to harmful radiation amounts with devastating health effects” following the refugees’ return to Bikini once testing had concluded.⁷² The Biden administration is currently devising a plan to clean up the nuclear waste from Bikini Atoll and has pledged reparations of roughly \$110 million to the island.⁷³ Similarly, France conducted testing of nuclear weapons in French Polynesia from 1966 to 1996, though without evacuating the residents or proposing a comprehensive plan for reparations. As a result of French bomb test on French Polynesia, an estimate of 100,000 French Polynesians were affected by contamination.⁷⁴ On the mainland, the U.S. passed the Radiation Exposure Compensation Act (RECA) in 1990, which “established an administrative program for claims relating to atmospheric nuclear testing and uranium industry employment” in an effort to provide reparations for civilians affected by nuclear weapons testing.⁷⁵ Testing was conducted in Utah and Arizona from 1945 to 1962; allegedly without warning to nearby residents. RECA qualifies residents of specific downwind and neighboring states for eligibility. Though the act is set to expire in 2024, the Senate voted to include New Mexico and Navajo Nation residents in the act in a continued effort to make reparations in August 2023, following renewed interest in the effects of the testing after the release of the

⁷⁰ “Storage and Disposal of Radioactive Waste.” *World Nuclear Association*, Information Library (January, 2023).⁷¹ Baher Kamal, “Nuclear-Armed Powers Squander \$156,000 Every Minute on Their ‘MAD’ Policy,” *Inter Press Service News Agency* (June 24, 2022).

⁷¹ Baher Kamal, “Nuclear-Armed Powers Squander \$156,000 Every Minute on Their ‘MAD’ Policy,” *Inter Press Service News Agency* (June 24, 2022).

⁷² Hart Rapaport and Ivana Nikolic Hughes, “After 75 years, it’s time to clean Bikini,” *Bulletin of the Atomic Scientists* (March 9, 2021).

⁷³ *Ibid.*

⁷⁴ “France owes French Polynesia ‘a debt’ over nuclear tests: Macron,” *France 24* (July 28, 2021).

⁷⁵ “Radiation Exposure Compensation Act,” *U.S. Department of Justice*, Civil Division (September 12, 2023).⁷

movie "Oppenheimer."⁷⁶

Nuclear Security and Safety for All

The link between international security and nuclear security have become increasingly intersectional in recent years. Individual state nuclear objectives to protect people, society, and the environment are fundamental for peace, requiring specific provisions and measures to promote complete global security. Nuclear Disarmament and non-proliferation continue to be at the forefront of the UN's efforts for protection and several multilateral treaties have since been established to further enhance human security. This includes dealing with preventing possible terrorists or other non-state actors from acquiring illegal transfers of nuclear material and is illustrated in section 123 of the U.S Atomic Energy act which, "requires the conclusion of a peaceful nuclear cooperation agreement for significant transfers of nuclear material or equipment from the United States."⁷⁷ Similarly, the UN also directly addresses this situation through the Convention on the Physical Protection of Nuclear Material (Vienna, 1980) and the International Convention for the Suppression of Acts of Nuclear Terrorism (2005). Ultimately, the IAEA acknowledges the gaps for nuclear security and implores for more adherence to international frameworks and instruments that will combat nuclear terrorism more effectively.

The destructive consequences of nuclear power are often left in the hands of innocent civilians. Both the immediate and long-term effects from nuclear powers include direct injury or death from the blast wave, burns from the heat and fires, blindness from the initial explosion, and radiation sickness (ARS). Individuals farther from the blast may also sustain direct bodily injury from nuclear fallout or from mass contaminated food and water sources. Although the international community has implemented numerous treaties and resolutions to address the prevention of these possibilities, such as the mentioned Nuclear-Weapon-Free Zones or IAEA guidelines, the state of discussions over present or future dangers of nuclear radioactivity leaves much to be desired.

⁷⁶ Russell Contreras, "New Mexico residents impacted by Trinity Test may get compensation," *Axios* (August 1, 2023).

⁷⁷ "123 Agreements for Peaceful Cooperation," *National Nuclear Security Administration* (December 7, 2022).

QUESTIONS TO CONSIDER

1. How can the international community support the development of nuclear power technology in developing countries to help reach lowered national emissions aligned with the 2030 Sustainable Development Goals?
2. How can non-proliferation and disarmament agreements be strengthened while encouraging the development of nuclear power technology?
3. What safety precautions need to be created or reinforced for the prevention of civilian and environmental harm in the upcoming surge of nuclear power technology?
4. Does your country support the Treaty on the Prohibition of Nuclear Weapons? If not, what concessions can your country make to cooperate with international security fears about nuclear armament?
5. Where does your country stand in regard to nuclear technology?
6. Will your country be willing to coordinate with neighboring countries to enter into Nuclear-Weapon-Free Zone agreements?
7. How does your government or the international community address concerns or misconceptions about nuclear power?
8. How does the history of nuclear power translate to today's current international conditions with nuclear power and energy?

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MARITIME SECURITY

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MUNFW 73rd Session - General Assembly First Committee

Maritime security has traditionally been limited to the protection of vessels from attacks and threats of attacks in the oceans. Thus, the UN Office on Drugs and Crime (UNODC) took the lead on issues dealing with transnational organized crime, which included piracy, drug trafficking, human trafficking, and even terrorism at sea. This narrow focus, however, is not enough. Maria Luiza Ribeiro Viotti, Chef de Cabinet to United Nations Secretary-General António Guterres, clearly stated the problem in a 2021 Security Council meeting:

“... threats related to maritime security affect people in every country – coastal and landlocked alike. For more than 3 billion people – the vast majority in developing countries – the issue takes on a special urgency, as they count on the oceans and seas for their daily social and cultural life, and for their livelihoods. Yet, maritime security is being undermined at alarming levels, she said, from challenges around contested boundaries and navigation routes that do not conform to international law, to the depletion of natural resources – including illegal, unreported and unregulated fishing – to armed attacks and crimes at sea, such as piracy, robbery and terrorist acts.”¹

The ensuing deliberations of the Security Council echoed these points, and the resulting presidential statement noted “the importance of safeguarding the legitimate uses of the oceans and the lives of people at sea, as well as the livelihoods and security of coastal communities.”² Yet it fell short of acknowledging

¹ United Nations. (2021, August 9). Issuing Presidential Statement, Security Council Underlines Importance of Maritime Safety, Safeguarding Oceans for Legitimate Use | UN Press. UN Press.
<https://press.un.org/en/2021/sc14598.doc.htm>

² United Nations. (2021, August). S/PRST/2021/15. United Nations | Security Council.
<https://www.un.org/en/delegate/page/un-official-documents>

the breadth and depth of issues in maritime security that is one of the key challenges in international security.

MAKING THE CASE FOR A BROAD DEFINITION OF MARITIME SECURITY

Seventy percent of the planet is covered by water; and although common parlance identifies five oceans – the Pacific, Atlantic, Indian, Arctic, and Antarctic – there is really only one ocean. Scientists state that “[g]reat currents around the entire planet ... so changes in one ocean basin eventually can affect all the others.”³ As such, any threats to the maritime domain are issues of international importance. To provide more examples:

- The oceans produce around fifty percent of the earth’s oxygen;⁴
- Coral reefs “cover only 0.2% of the seafloor [but] they support at least 25% of marine species and underpin the safety, coastal protection, well being, food and economic security of hundreds of millions of people;”⁵
- Forty million people are employed in ocean-based industries globally;⁶ and
- The oceans is the “trading route of the planet;”⁷ and
- The oceans add around \$1.5 trillion to the global economy (34% is off-shore drilling, 26% is in tourism, 13% is in ports, 10% in other industries, and 1% in fisheries);⁸
- There is ‘a growing range of new ocean-related economic activities and constant innovations.’⁹

Yet the ocean is suffering from environmental degradation and climate change in part due to economic activity. For example, freight ships are often over 20 years old and contribute to 847 million tons of CO2 emissions, which is nearly a 5% increase from 2020.¹⁰ The World Meteorological Organization (WMO) said that “four key climate indicators broke new records in 2021: sea level rise; ocean heat; ocean acidification; and greenhouse gas concentrations.”¹¹

³ Benningfield, D. (2015, August 23). One Ocean. One Ocean | Science and the Sea. <https://www.scienceandthesea.org/program/201508/one-ocean>

⁴United Nations, *World Oceans Day* (2023). <https://www.un.org/en/observances/oceans-day#:~:text=With%2090%25%20of%20big%20fish,and%20brings%20it%20new%20life.>

⁵ Planes, S., Wicquart, J., Logan, M., Obura, D., & Staub, F. (2021, October 5). Status of Coral Reefs of the World: 2020. UN Environment Programme. <https://germn.net/wp-content/uploads/2022/05/Status-of-Coral-Reefs-of-the-World-2020-Summary-for-Policymakers.pdf>

⁶ *Ibid.*

⁷ NOAA. (2023, January 20). How important is the ocean to our economy?. NOAA’s National Ocean Service. <https://oceanservice.noaa.gov/facts/oceaneconomy.html>

⁸ *The Ocean Economy in 2030*. OECD. (n.d.). https://read.oecd-ilibrary.org/economics/the-ocean-economy-in-2030_9789264251724-en#page27. p. 25

⁹ OECD. (2023). Ocean economy - OECD. The Ocean. <https://www.oecd.org/ocean/topics/ocean-economy/>

¹⁰ *Review of Maritime Transport 2022*. UNCTAD. (n.d.). <https://unctad.org/rmt2022>

¹¹ World Meteorological Organization, *State of climate in 2021: Extreme events and major impacts* (November 15, 2021) <https://public.wmo.int/en/media/press-release/state-of-climate-2021-extreme-events-and-major-impacts>

Climate change and other human activities – war, shipping, fishing, tourism, land reclamation and island building – are wreaking havoc on the world’s coral reefs. A 2018 report of the Intergovernmental Panel on Climate Change (IPCC) that coral reefs will decline by 70-90% or 99% if average global air temperature warms by 1.5 degrees celsius or 2 degrees celsius, respectively, above pre-industrial values. Left unabated, the coral reefs could disappear by 2050.¹² Around 90% of the big fish population is already depleted.¹³ The combination of climate change, structural inequities, and militarization could potentially lead to violent conflict. As the First Committee is charged to deal with “global challenges and threats to peace that affect the international community,” it is imperative that the intertwined international, national and human security issues arising from the oceans be addressed. There are at least three important issues to be addressed.

The first issue revolves around the fair access and use of ocean resources, as well as reinforcing the goals laid out in A/RES/70/1¹⁴, which are Sustainable Development Goals, or (SDGs). Fair access and resource management also directly relate to the Universal Declaration of Human Rights (UDHR), signed in 1948, which identified a set of aspirations for all peoples to achieve. The United Nations has been discussing the issues of the oceans for a long period, and it is logical to continue the work in that forum. Some of the manifestations of structural inequality are: (a) industrial inequality due to material, or geographical disadvantages, or both; (b) poverty in coastal communities; (c) environmental degradation – through tanker traffic, military exercises, naval patrols, as well as through plastic pollution – which is shouldered disproportionately by island nations.

Second, there is also a need to demilitarize the oceans. The broadened maritime jurisdictions resulting from the ratification of the United Nations Convention on the Law of the Sea (UNCLOS) has led to a scramble for islands, the assertion of various maritime claims, the deployment of improved naval and coast guard capabilities (including armaments), and the building of artificial islands. All of these are co-occurring with the depletion of ocean resources and, as such, can be the trigger for any conflict. By demilitarizing and putting island-building on hiatus, the international community can at least help prevent the further degradation of the environment. It could also prevent the involvement of more militarily-developed countries in conflict.

¹² Colbert, A. (2023, July 26). Vanishing Corals: NASA Data Helps Track Coral Reefs – Climate Change: Vital Signs of the Planet. NASA Climate.

<https://climate.nasa.gov/explore/ask-nasa-climate/3273/vanishing-corals-nasa-data-helps-track-coral-reefs/>

¹³ *Ibid.*

¹⁴ United Nations, *Transforming our world: The 2030 agenda for sustainable development (A/RES/70/1) | refugees and migrants*. General Assembly (2015)

<https://refugeesmigrants.un.org/transforming-our-world-2030-agenda-sustainable-development-ares701>

The final issue revolves around climate security and measures to mitigate the effects of climate change. Why should the First Committee tackle issues of climate security? First, the Security Council has failed to make climate security a standing item on its agenda, preferring to discuss it on an ad hoc basis. The Security Council has passed more than “70 resolutions and statements on climate-related security risks.”¹⁵ Yet in 2021, Russia vetoed a draft UN Security Council resolution enabling the United Nations to further analyze the “links between climate change and instability in countries and regions on the Council’s agenda, and request the Secretary-General to produce a report on these issues.”¹⁶ Twelve members of the Council voted for the resolution, India opposed it, Russia cast its veto, and China abstained. But the most crucial part of the story is that 113 UN members co-sponsored the text.¹⁷ There is also a recommendation to bring climate security to the agenda of the General Assembly.

UNCLOS AND THE HIGH SEAS TREATY

The UN Convention on the Law of the Sea (UNCLOS), also known as the Constitution of the Oceans, was opened for signature in 1982 and came into effect in 1994. It is now a legally binding agreement for 114 nation-states. The negotiations for UNCLOS went through three rounds over a span of twenty-four years. UNCLOS-I in 1958 led to agreements about the territorial sea and contiguous zone, the continental shelf, the high seas, and on fishing and conservation of living resources. This treaty, however, prioritized the exploitation of living and non-living resources on par with the importance of military naval fleets and merchant routes for the maritime powers that dominated the oceans.¹⁸ Thus, it focused on maintaining this status quo which was inimical to the development of poorer countries.

UNCLOS-II in 1960 did not result in any significant agreements. The impetus for renewed negotiations for a constitution for the oceans came in the wake of the speech of Arvid Pardo, ambassador of Malta to the UN, in 1967. He made an ardent plea for the General Assembly to ensure peace at sea, to protect ocean resources, and to consider the seabed as the “common heritage of mankind.”¹⁹ As such, the

¹⁵ A. Day and F. Kemp, *Beyond the UN Security Council: Can the General Assembly tackle the climate–security challenge?* (United Nations University, 26 June 2023)

<https://unu.edu/cpr/article/beyond-un-security-council-can-general-assembly-tackle-climate-security-challenge>

¹⁶ United Nations, “Security Council fails to adopt resolution integrating climate-related security risk into conflict-prevention strategies,” *UN press SC/14732* (December 13, 2021)

<https://press.un.org/en/2021/sc14732.doc.htm>

¹⁷ *Ibid.*

¹⁸ G. Goettsche-Wanli, G. (2014, December). *The United Nations Convention on the Law of the Sea: Multilateral diplomacy at work*. (United Nations: 2014),

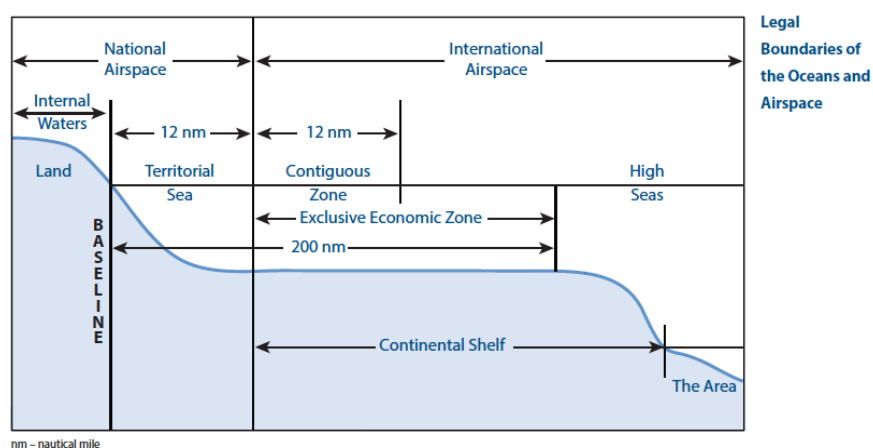
<https://www.un.org/en/chronicle/article/united-nations-convention-law-sea-multilateral-diplomacy-work>

¹⁹ *Ibid.*

seabed could be the source of funding that would close the gap between rich and poor countries. And after fifteen years, the negotiations for UNCLOS-III ended in 1982 with the treaty in its current form.²⁰

One of the key contributions of UNCLOS was the designation of maritime zones and the concomitant rights and responsibilities for coastal states and shipping vessels. The maritime zones, which stretch from the coastal state's baseline to the high seas, are areas over which coastal states have varying levels of rights and jurisdiction over the living and non-living resources.²¹ In a bid to balance the needs of all states, there are also different degrees of freedom afforded to foreign vessels for each maritime zone. As seen in Figure 1, these maritime zones are measured from baselines designated by the coastal state.

Figure 1. Maritime Zones under UNCLOS



Internal waters (all bodies of water on the landward side like rivers, canals, and lakes) and the territorial sea (extending 12 nautical miles from the baseline) are considered as the coastal state's sovereign territory where it has complete control and authority over all matters. That *sovereignty* extends to the airspace above those zones. Foreign vessels, however, do have the right of innocent passage through territorial waters but they are obligated to adhere closely to the rules and regulations of the coastal state. Otherwise, the coastal state will deny innocent passage especially if the foreign vessels try to enter its internal waters.²²

²⁰ Text of UNCLOS: https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf

²¹ National Oceanic and Atmospheric Administration, (2023, August 16). *Maritime zones and boundaries*, (August 16, 2023) <https://www.noaa.gov/maritime-zones-and-boundaries>

²² UNCLOS, Arts. 21 pt.4 UNCLOS: Foreign ships exercising the right of innocent passage through the territorial sea shall comply with all such laws and regulations and all generally accepted international regulations relating to the prevention of collisions at sea.

The contiguous zone is measured 24 nautical miles from the baseline. Coastal states have the right to enforce fiscal, immigration, sanitary, and customs law.²³ The Exclusive Economic Zone (EEZ) extends 200 nautical miles from the baseline. The coastal state has *sovereign rights* to all living and nonliving resources in the water column. It can also create and use artificial islands, installations, and other necessary structures, as well as conduct marine scientific research and implement measures to protect and preserve marine environment.²⁴ Foreign vessels have greater freedom of movement in the EEZ but they are prohibited from harvesting any resources without the permission of the coastal state. The continental shelf is described as "comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin."²⁵ Like in the EEZ, the coastal state also has *sovereign rights* to the resources on the seabed and its subsoil.

Beyond these zones are the high seas which are considered to be open to all states and are supposed to be for the "benefit of mankind as a whole."²⁶ All states can undertake any activity as long as they are peaceful such as transit, scientific research and exploration, fishing, among others.²⁷ Figure 2 below summarizes the extent of coastal state jurisdiction over the different maritime zones.

Another innovation of UNCLOS is the adoption of the archipelagic doctrine which is a legal principle that "all waters contained within the baselines drawn around the outer islands of a state which is entirely formed by one or more archipelagoes are the internal waters of that state and subject to its sovereign."²⁸ UNCLOS recognizes the sovereignty of archipelagic states over their archipelagic waters, but it also recognizes the right of transit of foreign vessels through archipelagic lanes designated by the concerned state. This was a principle pushed by countries like Indonesia and the Philippines, which quickly gained traction during the negotiations.

Figure 2. UNCLOS zones and coastal state enforcement jurisdiction

²³ UNCLOS, Arts. 33. UNCLOS also allows for the protection of archaeological objects found on the seabed in the Contiguous Zone.

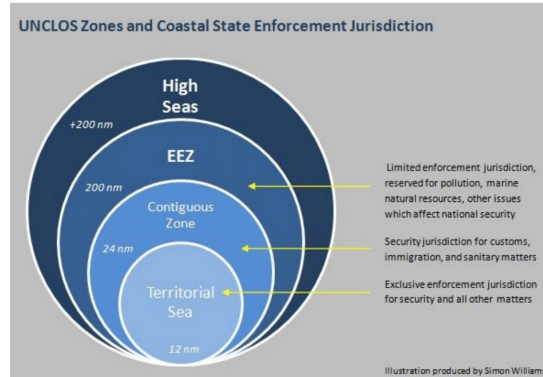
²⁴ UNCLOS, Arts. 60 pt 1 to 3.

²⁵ UNCLOS, Arts. 76 pt. 1.

²⁶ UNCLOS, Arts. 140 pt. 1.

²⁷ National Oceanic and Atmospheric Administration. (2023, August 16). *Maritime zones and boundaries* | *National Oceanic and atmospheric*. Maritime Zones and Boundaries. <https://www.noaa.gov/maritime-zones-and-boundaries>

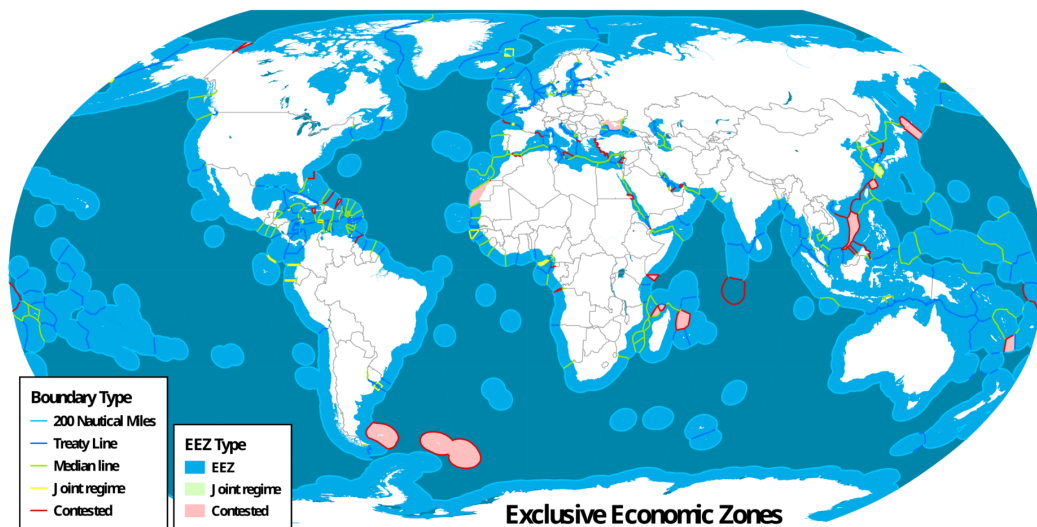
²⁸ DRAPER, J. A. (1977). The Indonesian Archipelagic State Doctrine and Law of the Sea: "Territorial Grab" or Justifiable Necessity? *The International Lawyer*, 11(1), 143–162. <http://www.jstor.org/stable/40705081>



UNCLOS PROMISES AND PROBLEMS

The extension of the EEZ to 200 nautical miles was certainly a boon for developing countries; however, this has led to a contraction of the waters considered as high seas. Figure 3 below shows this effect, and also demonstrates the overlap of many EEZs. Several states have reached maritime delimitation agreements with other countries; however, not all of these negotiations are reached peacefully. Some states have resorted to increased naval patrols to protect their EEZs. In addition, several states have gone on a spree of island-grabbing. UNCLOS states that naturally-formed islands can generate their own 200-nautical mile EEZs, which will certainly enable them to acquire sovereign rights over more resources.

Figure 3. EEZs in the world



Dr. Jean-Paul Rodrigue, Dept. of Global Studies & Geography, Hofstra University
 Source: Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11.

The High Seas Treaty

In June 2023, the High Seas Treaty was signed by all 193 member states in the UN²⁹. It is a landmark legally binding document that took over two decades to negotiate, and is expected to “provide a pathway for improved governance, conservation and sustainable use of biodiversity in the high seas.”³⁰

Among the most notable provisions of the High Seas Treaty are:

- An expanded network of Marine Protected Areas in the high seas;
- Effective conservation of at least 30% of the oceans;
- Equitable sharing of the benefits of the use of marine genetic resources;
- A new framework for Environmental Impact Assessments;
- Collaboration with other ocean management bodies;
- A resource mobilization target by 2030;
- A Conference of Parties that will meet periodically to assess the implementation and relevance of the treaty;
- Clear decision-making; and
- Swift action in emergency situations.³¹

The treaty underlines the importance of building and transferring marine technology, by strengthening institutional capacity and national regulatory mechanisms. The Treaty also recognizes the rights and traditional knowledge of indigenous peoples and local communities, and the need for fair and equitable sharing of benefits.³² This is especially significant when we remember that UNCLOS was mostly written for, and by, member states who were already major maritime powers. This essentially tipped the scales in favor of Global North versus the Global South despite the aspirations to ensure equitable access to oceans.

The High Seas Treaty is also very timely in the face of rising ocean temperatures which then leads to more frequent and intense storms, rising sea levels, and the salinization of coastal reefs and aquifers. That is, the treaty can help the international community finally realize and enforce sustainability principles.³³

Finally, the treaty will further 2030 Sustainable Development Goals (SDG) which aim to address overfishing, reduce marine pollution, and ensure the needs of Landlocked Developing Countries (LLDC's) and Small Island Developing States (SIDS) are met. The High Seas Treaty aims to expand on the terms set by UNCLOS as a way to refocus State actions with climate change directly in mind, and to set equitable trends

²⁹ United Nations. (2023, June 19). *A/CONF.232/2023/4*. United Nations | General Assembly. <https://digitallibrary.un.org/record/4013344?ln=en#record-files-collapse-header>

³⁰ The Nature Conservancy. (2023, April 11). Ten Things You Should Know About the High Seas Treaty. The Nature Conservancy. <https://www.nature.org/en-us/what-we-do/our-insights/perspectives/ten-things-high-seas-treaty/>

³¹ *Ibid.*

³² United Nations, “Beyond borders: Why new “high seas” treaty is critical for the World,” *UN News* (June 19, 2023) <https://news.un.org/en/story/2023/06/1137857#:~:text=The%20UN%27s%20193%20Member%20States,thirds%20of%20the%20planet%27s%20oceans>

³³ *Ibid*

for access to Ocean related technologies.³⁴ The language of the resolution focuses primarily on landlocked and developing States as a way to encourage development originating from areas outside of national jurisdiction.³⁵ This reaches further than just State bodies with extensions that apply to indigenous populations and multilateral cooperation between scientific institutions of each State.³⁶³⁷ Resource management and protection of resources is a fundamental aspect of the treaty in conjunction with climate change.

The treaty will be opened for signature in September 2023 during the annual General Assembly meetings and will enter into force once it is ratified by 60 states. It is estimated that the treaty could enter into effect by 2025.

Our Common Heritage

Established in 1994 under UNCLOS, the International Seabed Authority (ISA)³⁸ is an autonomous organ of the United Nations that aims to facilitate and monitor mineral resource-related activities. Since the 1960s, the international community has been discussing the promise of minerals in the seabed to be a prime source for humanity's mineral needs. These discussions have intensified due to the growing need to supply the global population's mineral needs and technological improvements in deep-sea mining.

The ISA concerns itself with the area of the high seas, defined as the seabed and subsoil beyond any national jurisdiction³⁹. In the event that a State wishes to explore and possibly exploit the minerals found in the high seas, they need to obtain approval from the ISA. Commercial interests center on three main types of deposits: polymetallic nodules, polymetallic sulfides, and cobalt crusts. These deposits are rich in heavy metals such as gold, zinc, silver, iron, copper, cobalt, lead, and manganese.⁴⁰ ISA can issue these contracts to both public and private entities but these activities should be conducted under the UN's policy of sharing these resources for the "benefit of mankind as a whole." There is particular emphasis on states that lack the appropriate means to participate in deep sea mining, to elevate their economic development. But with all this said, ISA aims to operationalize these activities while balancing the need for environmental conservation since deep sea mining can be extremely damaging to the ecosystem especially

³⁴ UN Resolution (A/CONF.232/2023/L.3)

³⁵ *Ibid* - Article 9

³⁶ *Ibid* - Article 13

³⁷ *Ibid* - Article 14

³⁸ *About ISA*. International Seabed Authority, "About ISA," <https://www.isa.org.jm/about-isa/>

³⁹ UNCLOS, Arts. 157, part 1.

⁴⁰ United Nations, *The International Seabed Authority and Deep Seabed Mining* <https://www.un.org/en/chronicle/article/international-seabed-authority-and-deep-seabed-mining>

on certain species of marine life and coral reefs, and it has the possibility of introducing toxic wastewater into the oceans.⁴¹

International Tribunal on the Law of the Sea (ITLOS)

UNCLOS also created the International Tribunal on the Law of the Sea (ITLOS) as a mechanism for arbitrating disputes over interpretations of the treaty. States parties to UNCLOS vote for twenty-one members to become part of the tribunal.⁴² Since its inception, the Tribunal has addressed many different disagreements between States and continues to play an important role in settling disputes among states. To date, there are 32 recorded cases in the Tribunal.⁴³

THE CHALLENGES

Challenge 1: Equitable Access to Resources and a Healthy, Sustainable Environment

UN Sustainable Development Goals (SDGs) that are directly related to equitable access to ocean resources are SDG 2: Zero Hunger; SDG 8: Decent Work and Economic Growth; SDG 10: Reduced Inequalities; SDG 13: Climate Action; SDG 14: Life Below Water; and SDG 17: Partnerships for Goals. Achieving these SDGs could lead to a clean, healthy, and sustainable environment, which would complement the rights identified in the Universal Declaration of Human Rights (UDHR), specifically the rights to life, liberty, security,⁴⁴ the right to an adequate standard of living.

Least Developed Countries (LDC's), Landlocked Developing States (LLDC's), and Small Island Developing States (SIDS) are addressed and supported through UNCLOS.⁴⁵ So when concerning these resources the question of accessibility comes to the forefront. Not every State will have the means to fully take advantage of these opportunities whether it be material resources or geographic location.

⁴¹ DSCC Deep Sea Conservation Coalition, *Impacts of deep-sea mining* (September 18, 2020) <https://savethehighseas.org/deep-sea-mining/impacts-of-deep-sea-mining/>

⁴² *The International Tribunal for the Law of the Sea - Latest News* (September 8, 2023) <https://www.itlos.org/en/main/latest-news/>

⁴³ International Tribunal for the Law of the Sea. (2023). List of Cases. Request for an advisory opinion submitted by the Sub-Regional Fisheries Commission (SRFC). <https://www.itlos.org/en/main/cases/list-of-cases/request-for-an-advisory-opinion-submitted-by-the-commission-of-small-island-states-on-climate-change-and-international-law-request-for-advisory-opinion-submitted-to-the-tribunal/>

⁴⁴ Ait Kaci, Y. (2015). Universal Declaration of Human Rights. United Nations. <https://digitallibrary.un.org/record/815442?ln=en>

⁴⁵ UNDP. (2023, January 17). The State of Climate Ambition: Snapshots for Least Developed Countries (LDCs) and Small Island Developing States (SIDS) - World. ReliefWeb. <https://reliefweb.int/report/world/state-climate-ambition-snapshots-least-developed-countries-ldcs-and-small-island-developing-states-sids>

Nevertheless, the UN has created agencies to address developing coastal and landlocked states, such as the Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries, and Small Island Developing States (UN-OHRLLS) in 2001. The UN-OHRLLS's objective is to support 92 vulnerable States in sustainable development and access to technology that would aid in that goal.⁴⁶

At the same time, there is also a need to ensure equitable access to resources within countries especially for vulnerable populations such as coastal communities, women and indigenous peoples.⁴⁷ Oftentimes, they are economically marginalized by the fishing and tourism industries, or their homes polluted by oil and shipping industries. These same industries, however, also provide employment opportunities for the local population.

Thus, another big challenge is how to balance economic growth with environmental sustainability and how to make that growth more inclusive. In response to this concern, the United Nations introduced the concept of the "blue economy" which is "based on the argument that marine ecosystems are more productive when they are healthy." The Blue Economy's goal is to ensure that economic activities related to the oceans are "sustainable and socially equitable."⁴⁸ This opens up other opportunities for marginalized groups and developing countries. Table 1 below identifies current and emerging ocean-based industries that states can explore.

Table 4. Established and Emerging Ocean-Based Industries⁴⁹

⁴⁶ Small Island Developing States. Global Environment Facility. (2023).

<https://www.thegef.org/what-we-do/topics/small-island-developing-states>

⁴⁷ United Nations. (n.d.-b). Promoting gender equality a "crucial contribution" in effort to restore, protect our planet's oceans. United Nations.

<https://www.un.org/en/desa/promoting-gender-equality-%E2%80%98crucial-contribution%E2%80%99-effort-restore-protect-our>

⁴⁸ *Blue Economy: Oceans as the next Great Economic Frontier*. United Nations. (2022, March 22).

<https://unric.org/en/blue-economy-oceans-as-the-next-great-economic-frontier/#:~:text=The%20UN%20first%20introduced%20%E2%80%9Cblue,productive%20when%20they%20are%20healthy.>

⁴⁹ OECD (2016), *The Ocean Economy in 2030*, OECD Publishing, Paris.

<http://dx.doi.org/10.1787/9789264251723-en>

Established	Emerging
Capture fisheries	Marine aquaculture
Seafood processing	Deep- and ultra-deep water oil and gas
Shipping	Offshore wind energy
Ports	Ocean renewable energy
Shipbuilding and repair	Marine and seabed mining
Offshore oil and gas (shallow water)	Maritime safety and surveillance
Marine manufacturing and construction	Marine biotechnology
Maritime and coastal tourism	High-tech marine products and services
Marine business services	Others
Marine R&D and education	
Dredging	

The High Seas Treaty aimed to expand on the terms set by UNCLOS as a way to refocus State actions with climate change directly in mind, and to set equitable trends for access to Ocean related technologies.⁵⁰ The language of the resolution focuses primarily on landlocked and developing States as a way to encourage development originating from areas outside of national jurisdiction.⁵¹ This reaches further than just State bodies with extensions that apply to indigenous populations and multilateral cooperation between scientific institutions of each State.⁵²

Challenge 2: Demilitarization

The expansion of maritime zones and the struggle for resources has led to more maritime disputes. Unfortunately, some of these disputes have led to the militarization of various islands and the use of aggressive actions short of war. This is the case in the South China Sea where claimants have placed military assets on islands, rocks, and cays. China's constant harassment of other claimants has led the US to issue public statements against China. The US also conducts regular freedom of navigation operations (FONOPS) in areas claimed by China, leading to concerns about a possible naval confrontation between two nuclear powers.⁵³

While UNCLOS has mechanisms for dispute resolution and for cooperation, it does not have any measures to counter militarization. Disputing parties would have to negotiate measures for the eventual demilitarization in disputed maritime zones. In this endeavor, the parties could possibly turn to the UN Office for Disarmament Affairs (UNODA) for assistance as one of its tasks is regional disarmament. In

⁵⁰ UN Resolution (A/CONF.232/2023/L.3)

⁵¹ *Ibid.*, Article 9.

⁵² *Ibid.*, Articles 13 and 14.

⁵³ Hoppe, J. (2022, February 17). *The measure of the Sierra Madre*. U.S. Naval Institute. <https://www.usni.org/magazines/naval-history-magazine/2022/february/measure-sierra-madre>

addition, the parties could use principles such as the observance of environmental norms in disarmament to guide their actions.

Challenge 3: Piracy⁵⁴

UNCLOS defines piracy as illegal violence, detention, or plundering committed for private ends by the seafarers of a private vessel on the high seas or outside the jurisdiction of any State against another ship, aircraft, person(s), or property.⁵⁵ Piracy is also any act of voluntary participation as a crewmember or inciting others to the acts of piracy and intentionally facilitating such acts.⁵⁶

The Security Council has reaffirmed the UNCLOS definition of piracy and enacted S/RES/1897 (2009) which states that “States shall cooperate to the fullest possible extent in the repression of piracy on the high seas or in any other place outside the jurisdiction of any State.”⁵⁷ This is echoed by the General Assembly in A/RES/64/71 which encouraged multilateral cooperation to deal with piracy and maritime robberies. The Division for Ocean Affairs and the Law of the Sea, the secretariat of UNCLOS, is mandated to provide updated information on piracy and other crimes at sea.⁵⁸

UNCLOS recognizes that “these criminal acts may result in the loss of life, physical harm or hostage-taking of seafarers, significant disruptions to commerce and navigation, financial losses to shipowners, increased insurance premiums and security costs, increased costs to consumers and producers, and damage to the marine environment.”⁵⁹ This is borne out by recent events, which also highlight the need for cooperation.

Leonardo Santos Simaõ, the Special Representative and Head of the UN Office for West Africa and the Sahel (UNOWAS) stated that the Sahel region requires tangible and long-term support to stamp out the scourge of piracy and address the current humanitarian crisis where 6.3 million people have been displaced.⁶⁰ Sustained pirate and terror attacks in West Africa have disrupted the provision of such aid. Pirate attacks in the Gulf of Guinea consist of militant-style attacks with hijackings, kidnappings, and more

⁵⁴ Refer to: ICC Live Piracy & Armed Robbery Report 2023

⁵⁵UNCLOS, Article 101.

⁵⁶ *Ibid.*

⁵⁷S/RES/1897(2009)

⁵⁸ United Nations. (n.d.-a). Piracy under international law. United Nations.

<https://www.un.org/depts/los/piracy/piracy.htm>

⁵⁹ *Ibid*

⁶⁰United Nations. (n.d.-f). West Africa, Sahel requires tangible, long-term support to eliminate terrorism, address humanitarian crisis, Special Representative tells Security Council | UN press. United Nations.

<https://press.un.org/en/2023/sc15365.doc.htm#:~:text=The%20crisis%20in%20the%20Sahel,persons%20across%20the%20Sahel%20region.>

violent acts.⁶¹ Attacks on international vessels have also increased as they are capable of paying large ransoms which amount to around \$5 million annually according to the Security Council.⁶²

In contrast to the attacks in Africa, attacks in the Singapore Straits are usually less violent and are more opportunistic.⁶³ Pirates in these regions typically attack at night with knives, steal merchandise or machine parts, and quickly escape on smaller vessels that are indistinguishable from ordinary fishing vessels or canoes.

When discussing the demilitarization of oceans it is vital to consider the international impacts of piracy and how to mitigate violence on an international level. How can we demilitarize the oceans while still increasing security to protect seafarers globally from piracy?

Figure 5. IMB Piracy & Armed Robbery Map 2023⁶⁴



⁶¹Security, C. (2023, July 3). Piracy and robbery in the Gulf of Guinea and strait of singapore: A comparative analysis. CommonwealthSecurity.

<https://www.commonwealthsecurity.org/post/piracy-and-robbery-in-the-gulf-of-guinea-and-strait-of-singapore-a-comparative-analysis>

⁶² Security Council Report. (2022, October). *Gulf of guinea piracy*. Security Council Report.

<https://www.securitycouncilreport.org/monthly-forecast/2022-11/gulf-of-guinea-piracy.php#:~:text=A%20December%202021%20study%20by,generated%20approximately%20%245%20million%20annually>

⁶³ *Ibid*

⁶⁴ *IMB Piracy & Armed Robbery Map 2023*. ICC Commercial Crime Services. (2023).

<https://www.icc-ccs.org/piracy-reporting-centre/live-piracy-map>

Challenge 4: Climate Change

Climate change is a clear and present danger, yet a draft Security Council resolution on climate security vetoed by Russia in 2021.⁶⁵ This would have allowed the United Nations to respond quickly to climate change disasters and conflicts. The reason why it is so vital that climate change continues to be a main focus of the UN is due to rising global security risks associated with the prevalence of destructive weather phenomena, famine, and drought.⁶⁶

Another key security concern is the possible impact of rising sea levels on extent of maritime zones. These zones might expand or contract and could cause more conflicts over control of viable fishing grounds. Maritime disputes such as those in the South China Sea make it necessary for the UN to address the implication that climate change has on security in conjunction with the role that oceans play.

The destructive effects of climate change will soon be irreversible without immediate and structural changes. The most severe effect will be the sinking of small island developing states (SIDS) which are located in the middle of the Pacific Ocean, the Indian Ocean, and the Caribbean Sea. In this case, where will the people go? The irony is that the global carbon emissions that cause climate change which, in turn, causes sea levels to rise are produced by more developed nations, and not by the developing countries. Could they be held responsible for the climate refugees?⁶⁷

To call attention to these dire circumstances, the UN designated 2021-2030 as the Ocean Decade, aiming to strengthen the health of the ocean through sustainable development and the spreading of technology.⁶⁸ Avoiding destruction by climate change will be absolutely pertinent to the survival of humanity, and the need for a unified effort to address these problems is the key to ensuring this before the effects are irreversible.

⁶⁵ United Nations. (n.d.-a). Security Council fails to adopt resolution integrating climate-related security risk into conflict-prevention strategies | UN press. United Nations. <https://press.un.org/en/2021/sc14732.doc.htm>

⁶⁶ *Beyond the UN Security Council: Can the UN general assembly tackle the climate-security challenge?*. SIPRI. (n.d.).

<https://www.sipri.org/commentary/essay/2023/beyond-un-security-council-can-un-general-assembly-tackle-climate-security-challenge>

⁶⁷ IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34, doi: 10.59327/IPCC/AR6-9789291691647.001

Additional Reference - Kiln. (n.d.). The Carbon Map. <https://www.carbonmap.org/>

⁶⁸ Vision & Mission. Ocean Decade. (2023, August 3). <https://oceandecade.org/vision-mission/>

CASE STUDIES

The case studies below demonstrate how closely interrelated the above mentioned challenges are in practice. The urgency to resolve disputes and prevent, or at least manage, conflict is pushed by climate change and to save human lives.

Case 1: South China Sea: Conflict-Environment-Great Power Politics

The South China Sea case is one of the thorniest problems in global security – maritime disputes resulting from claims to extended maritime zones and island-grabbing have led to the militarization of outposts and harassment at sea. In addition, environmental degradation and ocean warming has led to dwindling fish catch much to the detriment of coastal communities who are also the first victims of climate-related disasters such as rising sea levels and extreme weather conditions. Layered on top of all of these problems is the great power dynamics between China and the US – the first pursuing the occupation of islands in order to realize its “nine-dash lines” (which has been decided by ITLOS as inconsistent with UNCLOS), and the second insistent on preserving free and open access to sea lanes and conducting freedom of navigation operations (FONOPS) to preserve its naval dominance in the area. Ironically, all of these are issues that arise from UNCLOS but there are no international or regional mechanisms to help prevent or manage conflict.

Importance to the Global Economy. The South China Sea is one of the world’s major trade routes – around “50 percent of global oil tanker shipments pass through the South China Sea, which sees three times more tanker traffic than the Suez Canal and more than five times that of the Panama Canal.”⁶⁹ In addition, Asia has become the largest maritime cargo hub of the world, accounting for 42% of exports and 64% of imports as of 2021.⁷⁰ Additionally, the World Bank, in 2009 stated that the South China Sea potentially holds around 7 billion barrels of proven oil reserves and 900 trillion cubic feet of natural gas.⁷¹ While this is much less than the oil reserves in the Middle East, they are substantial enough to provide for the energy requirements of the developing countries surrounding the area. (K. Xu 2009). In terms of fisheries

⁶⁹ Teh, Lydia C. L., and Daniel Pauly. 2018. “Who Brings in the Fish? The Relative Contribution of Small-Scale and Industrial Fisheries to Food Security in Southeast Asia.” *Frontiers in Marine Science* 5. <https://www.frontiersin.org/articles/10.3389/fmars.2018.00044>.

⁷⁰ UNCTAD’s *Review of Maritime Transport 2022: Facts and figures on Asia and the Pacific*. UNCTAD. (2022, November 29).

<https://unctad.org/press-material/unctads-review-maritime-transport-2022-facts-and-figures-asia-and-pacific>

⁷¹ Lai, H. (2009). *Asian Energy Security: The Maritime Dimension*. SpringerLink. <https://link.springer.com/book/10.1057/9780230619609>

resources, the average annual catch in South China is reportedly 7.76 million tonnes, with an annual average value of 9 billion tons; and half of the world's fishing boats ply the South China Sea.⁷²

Littoral Countries. The littoral states of the South China Sea are Brunei Darussalam, the Philippines, Taiwan (Republic of China), Indonesia, Singapore, Malaysia, Vietnam, and China (People's Republic). Except for China and Taiwan, the littoral countries claim only some parts of the South China Sea and maritime features which fall within their 200-nm EEZs. China claims the whole of the South China Sea under its nine-dash line claim which it publicized in 2009. The main island groups in the South China Sea are the Paracel Islands and the Spratly Islands.

Regime of Islands and Island-Building. The term "islands" can be misleading as there are only a few maritime features in the South China Sea that can be considered as "islands" under the definition of UNCLOS. The rest of the maritime features in the South China Sea are coral reefs, rocks, shoals, and cays. Article 121, par. 1 states that an island is "a naturally formed area of land, surrounded by water, which is above water at high tide," and is differentiated from rocks that cannot sustain "human habitation or economic life" (UNCLOS, Art. 121, par. 3). The dispute arises from the same UNCLOS article stating that islands can generate their own EEZs. This explains the island-grabbing that has been occurring since the 1970s.

In addition, littoral states are creating artificial islands, an activity that is permissible under UNCLOS as long as those artificial islands fall within the country's EEZ. Building on islands or creating artificial islands, as well as ensuring that these constructions can accommodate military equipment and support naval and coast guard ships, has led to the destruction of the extensive coral reefs in the South China Sea.⁷³ As of the current time, the Asia Maritime Transparency Initiative estimates that total reclaimed area in the South China Sea is around 3,000 acres, 95% of which were constructed by China within the last eight years. China has used its fortifications in the South China Sea to increase the number of naval patrols, harass exploratory drilling efforts by Vietnam and Malaysia, and prevent Philippine ships from resupplying their outposts.⁷⁴

Philippines v China⁷⁵

⁷² Sumaila, U. Rashid. 2019. "Comparative Valuation of Fisheries in Asian Large Marine Ecosystems with Emphasis on the East China Sea and the South China Sea LMEs." *Deep Sea Research Part II: Topical Studies in Oceanography*, May, 96–101.

⁷³ [Asia Maritime Transparency Initiative - Occupation and Island Building](#)

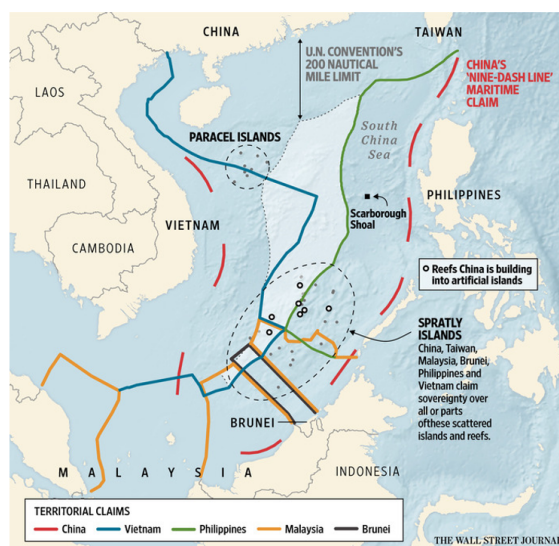
⁷⁴ (Almost) everyone is drilling inside the nine-dash line. Asia Maritime Transparency Initiative. (n.d.).

<https://amti.csis.org/almost-everyone-is-drilling-inside-the-nine-dash-line/>

⁷⁵ [The South China Sea Arbitration, Permanent Court of Arbitration, 2016](#)

In 2013, the Philippines filed a case against China. Under UNCLOS, the disputing parties may use any dispute resolution mechanism but if they fail to do so, the default mechanism is an independent Arbitral Panel. Under the rules, each disputing party will select candidates; but since China refused to participate, and under UNCLOS, the president of ITLOS selected the three remaining members who were also members of ITLOS. The Permanent Court of Arbitration was the registry of arbitration in order to ensure the integrity of the process.

Figure 6. Maritime Claims in the South China Sea



The case was filed because of China's continued harassment such as the use of water cannons against the Filipino resupply ships, preventing personnel exchange and further causing tension, and its unwillingness to work on a code of conduct in the South China Sea following its occupation of Mischief Reef which was well within the Philippines' EEZ.⁷⁶⁷⁷

The four main points of concern for the Philippines were:

- The legality of China's nine-dash line claim under the UNCLOS;
- The status of features within the South China Sea like islands, rocks, and submerged banks, all of which affect the maritime borders for both states;

⁷⁶ Hoppe, J. (2022, February 17). *The measure of the Sierra Madre*. U.S. Naval Institute.

<https://www.usni.org/magazines/naval-history-magazine/2022/february/measure-sierra-madre> It should be noted that both countries have been parties to some form of conflict in the past; but those conflicts were usually limited in scale. The current harassment involved much larger Chinese ships compared to Philippine ships.

⁷⁷ Established in 1899 under the Convention for the Pacific Settlement of International Disputes, the Permanent Court of Arbitration is an International Organization that isn't directly a United Nations organ but instead an observer. The Permanent Court of Arbitration aims to fulfill the goals of the Convention for the Pacific Settlement of International Disputes in the cases that diplomacy has failed to resolve the issue. This is very similar to the International Tribunal on the Law of the Sea, and with 122 contracted parties, it continues to arbitrate over legal disputes

- Actions by China which violated the sovereign maritime zones of the Philippines and negatively affected the environment, both of which were protected by the UNCLOS; and
- Large-scale land development in the Spratly Islands which escalated tensions between both parties during the settlement process.

With the Philippines' positions made clear on the matter, China answered by claiming the Court didn't have the jurisdiction to make decisions on the matter and that it wouldn't participate or accept the proceedings. In China's Position Paper, they claimed that the dispute was about territorial sovereignty, and therefore not a matter of application of the UNCLOS; this argument was rejected by the Court, maintaining that the matters at hand could be decided without concerning the notion of State sovereignty or boundary delimitation. The Court's jurisdiction over the matter was a main concern by China in the arbitration but the Court itself found that there was indeed a legal basis for its decisions applying to the parties at hand.

Eventually, the Court made its decisions regarding the concerns on behalf of the Philippines⁷⁸:

- 1) Under the UNCLOS China did not have a legal claim for the nine-dash line because the UNCLOS effectively replaced historical arguments as the bases for claiming maritime zones;
- 2) The temporary use of features in the Sea did not amount to the inhabitation of a stable community, and the high-tide features in the Spratly Islands are legally "rocks," which do not generate exclusive economic zones, and that UNCLOS did not provide for a grouping of islands to collectively constitute a maritime zone;
- 3) China had in fact violated the Philippines' exclusive economic zone and on multiple occasions obstructed Philippine activities; additionally, the Court found that China knowingly caused severe harm to the ecosystems of the Spratly Islands, harvested endangered species, and failed to fulfill its due diligence to stop said actions; and
- 4) China had violated its obligations to avoid further aggravation or instigation during the arbitration.

The Courts had mostly sided with the Philippines but also acknowledged that the two states had two very different interpretations of what UNCLOS legally allowed them to do. UNCLOS does not have an enforcement mechanism however it does still allow further possible pressure by both the Philippines and other non-state actors. This decision has been supported by more countries than have opposed it (see Table 7 below.) But with all that said, island building continues to this day, and the States surrounding the South China Sea continue to compete for control over the features of the Sea. Militarization of these features is an important factor when considering the accessibility to resources in the area, but the states' actions over this area led to environmental damage.

Table 7. Asia Maritime Transparency Initiative tracker

⁷⁸ Pichel Medina, C. (2017, February). *South China Sea: War on the horizon?*. Global Challenges. <https://globalchallenges.ch/issue/1/legal-victory-for-the-philippines-against-china-a-case-study/>

Post-Arbitration Support Tracker

Opposing Ruling	Positively Acknowledging Ruling		Supporting Ruling	
China	Bosnia and Herzegovina	Luxembourg	Australia	Japan
Montenegro	Bulgaria	Malaysia	Austria	Netherlands
Pakistan	Croatia	Malta	Belgium	New Zealand
Russia	Cyprus	Myanmar	Canada	Philippines
Sudan	Estonia	Portugal	Czechia	Poland
Syria	Hungary	Singapore	Denmark	Romania
Taiwan	Indonesia	Slovenia	Finland	Slovakia
Vanuatu	Latvia	Timor-Leste	France	South Korea
	Lithuania	Vietnam	Germany	Spain
			Greece	Sweden
			India	United Kingdom
			Ireland	United States
			Italy	

Case 2: Black Sea Blockade: War, Food Supply and Human Insecurity

There is an immediate security risk in the Black Sea due to the Ukrainian-Russian conflict. Russia invaded and annexed the region of Crimea in 2014, under the guise of protecting the rights of Russian citizens and Russian speakers in Crimea and southeast Ukraine. A series of referendums to recognize Crimea as Russian territory led to armed conflict, which concluded in a ceasefire known as the 2014 Minsk Accords. Tensions, however, continued to escalate with Russia building up its troops at their common border between October to November 2021. Eventually, Russian forces invaded Ukraine on February 24, 2022. President Vladimir Putin justified this “special military operation” as necessary to to ‘demilitarize and denazify’ Ukraine and to end the alleged genocide of Russians within the Ukrainian territory.⁷⁹ Russia’s the Black Sea Fleet set up a blockade to support its “antiterrorist operations.” Russia’s Department of Navigation and Oceanography issued a navigational warning stating that ships were prohibited from passing through the Black Sea and that if they did so, they would be flagged as terrorist threats.⁸⁰

The war has prevented the export of grain and wheat to several African countries, leading to greater food insecurity and higher food prices. To remedy this problem, Turkey and the UN helped broker the “Initiative on the Safe Transportation of Grain and Foodstuffs from Ukrainian Ports,”⁸¹ or the Black Sea Grain Initiative, concluded in July 2022. The initiative allowed for commercial foodstuffs and fertilizer (including ammonia) exports to be transported from three key Ukrainian ports in the Black Sea – Odessa,

⁷⁹ Council on Foreign Relations. (2023, August 15). *War in Ukraine*. Center for Preventive Action. <https://www.cfr.org/global-conflict-tracker/conflict/conflict-ukraine>

⁸⁰ United Nations. (2023, July 21). *Russian Federation Attacks on Ukrainian Ports Risk Far-Reaching Impacts for Food in Developing Countries, Under-Secretary-General Tells Security Council*. SC/15362. <https://press.un.org/en/2023/sc15267.doc.htm>

⁸¹ United Nations. (2022, July). Initiative on the Safe Transportation of grain and foodstuffs from Ukraine. https://www.un.org/sites/un2.un.org/files/black_sea_grain_initiative_full_text.pdf

Chornomorsk, and Yuzhny/Pivdennyi. To implement and monitor the initiative, The Joint Coordination Centre (JCC) was established and hosted in Turkey with representatives from Russia, Türkiye, Ukraine, and the United Nations; the UN also acts as the Secretariat for the Centre.⁸²

The agreement allowed the shipping of grain from Ukraine, however, this arrangement had to be continuously renewed every 120 days. This arrangement lasted until July 2023 when Russia backed out of the deal, claiming that it was unjust that Ukraine was allowed to export grain while sanctions were imposed on Russian foodstuffs and fertilizer. Thus, food scarcity and famine are expected to rise globally. An important consideration is that even before Russia broke the deal, exports were not moving quickly enough because Russia had imposed lengthier inspection processes on ships.⁸³

Ukraine exports enough food during peaceful times to feed about 400 million people.⁸⁴ These shipments go to other countries around the world but this blockade particularly impacts people in food-scarce areas experiencing famine, like in African States. By July 2023, the World Food Programme (WFP) had procured 80 percent of its global wheat grain from Ukraine, up from 50 percent in 2021 and 2022.⁸⁵ This aid was never shipped because the agreement was discontinued and because Russia started attacking the ports and grain silos along the coast of Ukraine.⁸⁶

A statement from The Russian Defense Ministry stated that "ships will be considered as having entered the conflict on the side of the [Ukrainian] regime," discouraging ships from transporting Ukrainian goods.⁸⁷ The WFP, which is responsible for feeding over 160 million people globally, relied on the Black Sea Grain Initiative to ship "480,000 metric tons of wheat out of Ukraine [as of February 2023], supporting operations in Ethiopia, Yemen, Afghanistan, Somalia, and beyond."⁸⁸ With the end of the agreement, this means that approximately 265.6 billion meals are no longer being provided by Ukrainian grain through the WFP.

⁸² *Ibid*

⁸³ United Nations. (2023, July 10). *One year of the Black Sea initiative: Key facts and figures* . Humanitarian Aid. <https://news.un.org/en/story/2023/07/1138532>

⁸⁴ <https://www.wfp.org/countries/ukraine>

⁸⁵ United Nations. (2023, July 10). *One year of the Black Sea initiative: Key facts and figures* . Humanitarian Aid. <https://news.un.org/en/story/2023/07/1138532>

⁸⁶ United Nations. (2023, July 26). *Attacks on odesa port, grain-storage facilities latest victims in Moscow's "senseless" war against Ukraine, senior official tells Security Council | UN press*. SC/15367. <https://press.un.org/en/2023/sc15367.doc.htm>

⁸⁷ LaGrone, S. (2023, July 20). *Russia lays mines in Black Sea to block Ukrainian ports, NSC says*. USNI News. <https://news.usni.org/2023/07/19/russia-says-all-ships-in-the-black-sea-heading-to-ukraine-are-potential-carriers-of-military-cargo>

⁸⁸ *Ibid*

Case 3: African Fisheries: Equity of Access and Conflict

Currently there is a rising concern over Africa's access to the ocean's resources, particularly access to fishing. As previously mentioned, fishing is a critical economic sector for many African states but the gap between small-scale fishing and industrial fisheries has been rising. This is further exacerbated by the decreasing yield for these fisheries, causing tension among different groups, many of whom often turn to illegal fishing practices in order to be able to sustain their livelihood. Estimates vary but are nonetheless alarming: some forecast a 30% decline in yield in the intertropical belt around Africa as early as 2050.⁸⁹ Around 19% of the protein intake of African populations is centered around fish, and amidst a rapidly increasing population, the need for consistent food sources is all the more important.

The year 2020 was an extremely difficult one for the continent. Worsening climate change resulted in droughts and floods, the COVID-19 pandemic war running rampant, and there were locust infestations in the Arabian Peninsula. The states most affected by the locusts were Ethiopia, Kenya, and Somalia, but other states suffered as well. These include Djibouti, Eritrea, Sudan, South Sudan, Tanzania, Uganda, and Yemen. In Ethiopia, the infestation led to loss of farmland and cereal grain resulting in over one million Ethiopian people becoming food insecure.

With the loss of food on land, people have turned to fish. But widespread food insecurity has caused tensions and oftentimes violence among neighbors. For example, in 2017 Cameroonian law enforcement started requiring Nigerian fishermen to pay additional taxes on harvests. This led to violence where 97 Nigerian fishermen were killed. As this was in a disputed maritime zone the United Nations and the Economic Community of West African States (ECOWAS) intervened, finding a way to avert the crisis. Nonetheless, this conflict highlights the consequences of weakened maritime security and depletion of necessary resources.

Because small-scale fishers cannot compete effectively against fishing industries, the former have been driven to sail beyond their country's EEZ and venture into a neighboring state's EEZ. Under UNCLOS, transgressions such as these should not be penalized by imprisonment; nevertheless, it creates tensions over time. At the end of the day, this is a concern over basic needs of human security: food, shelter, water, and clothing; When these needs are not met to what extent does the international community feel it should intervene and offer aid?

⁸⁹*The World Climate and Security Report 2021*. International Military Council on Climate and Security. (2021, June 8). <https://imccs.org/the-world-climate-and-security-report-2021/> p.48

QUESTIONS TO CONSIDER

1. Is your country a party to UNCLOS? Why or why not? Does your country plan to sign and ratify the High Seas Treaty? Why or why not?
2. Is your country involved in any maritime dispute with another country or countries? What is your country doing to assert its claims, or what is your country doing to find a lasting solution regarding this dispute?
3. Is your country landlocked or at any particular disadvantage with regard to access to the oceans and its resources? How is your country remedying this situation?
4. How would demilitarization of the oceans, as a principle, impact your country?
5. How can states be held accountable for violations of UNCLOS?
6. How can the U.N. continue to promote the principle of sustainable development in resource equality in the current state of the international community?
7. How can the First Committee effectively include climate security as a standing item in its regular agenda? What are the advantages and disadvantages of doing so?
8. How can the First Committee extend its focus to actionable solutions that include vulnerable populations with the UN having dedicated itself as an institution to well-being and personal security?

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