ITU MUN

UNEP

STUDY GUIDE

- Enhancing the Management and Sustainable Disposition of Chemicals and Nuclear Waste
- Strengthening the Legal Framework to Empower Environmental Governance through the Transformation of Financial and Economic Structures

Eylül Su Karaman
President Chair

Bilel Elarem
Deputy Chair

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I. Letter from the Secretary General

Most esteemed participants of ITUMUN24,

I, as the Secretary General of ITUMUN24, welcome you all to the 7th edition of Istanbul Technical University Model United Nations. It is an honor and a pleasure to be able to present to you what we have been preparing for months and dreaming for years. My team has worked tirelessly to bring the best you have ever seen, starting with our organization to our academics.

Our objective is to facilitate proficient and elevated diplomatic deliberations, fostering valuable and constructive solutions throughout the four-day duration of ITUMUN, enriched by the collective contributions of all participants. As a delegate, your journey begins here, with the study guide prepared by our dedicated members; your most honorable chairboard.

I advise you to read this study guide thoroughly and expand your research on different perspectives; focusing on your allocated country. It is essential to bear in mind that each nation and every perspective holds significance if you are adequately prepared to engage with the agenda at hand.

You have my best wishes for success and enriching discussions during these four days of enjoyment. I eagerly anticipate witnessing the valuable contributions you'll make to our conference.

Best regards,

Zehra Akçay

Secretary General of ITUMUN24

II. Letter from the Chairboard

Meritorious Participants,

We extend our warmest greetings to you as we join the 2024 edition of Istanbul Technical University Model United Nations (ITUMUN) in conjunction with the United Nations Environment Program. We are Eylül Su Karaman and Bilel El Arem; currently students of Economics in Istanbul Technical University and Mechatronics Engineering in Yıldız Technical University, respectively. We are proud to serve you as your board members

The prospect of engaging in four days of intense deliberation and enjoyable social events with each of you brings us immense joy. Throughout your stay at ITU, our commitment is to ensure you have an exceptional experience.

The topics on the UNEP agenda hold profound significance on a global scale. We eagerly anticipate hearing a diverse array of perspectives on these pressing matters. We hope that each of you will embody the collaborative and dedicated spirit of MUN, working together to formulate robust resolutions.

This study guide is designed to assist you in your research and conference preparation. Nevertheless, we strongly encourage you to delve deeper into the subject matter—explore your country's stance and acquire comprehensive knowledge. The more thoroughly you prepare, the more enriching your debates with fellow participants at ITUMUN will be!

Before wrapping up, we would like to thank our honorable Secretary General Ms. Zehra Akçay for offering this spot for the both of us. Also, another thank you goes to the hardworking academic and organization team of this prestigious conference. Should you have any inquiries about the conference, please feel free to reach out to us. We wish you the very best in your preparations and eagerly anticipate your participation in the conference!

Kind regards,

Eylül Su Karaman & Bilel Elarem
Chairboard of UNEP
eyllullssu@gmail.com
bilel.elar@gmail.com

III. Introduction to the Committee: United Nations Environment Programme and Historical Analysis

The United Nations Environment Program (UNEP), commonly referred to as UN Environment, was established in 1972 to oversee and coordinate environmental initiatives within the UN. It originated from the Stockholm Conference on the Human Environment and was officially formed on December 15 through the adoption of Resolution 2997. The first conference took place at the Palais des Nations in Geneva, but its official headquarters were later relocated to Nairobi, Kenya, following complete facility preparations. The organization initially had a staff of 300, including 100 professionals from various fields of study. The United States initially committed $40 million, with the remaining $60 million pledged by the other 57 member states.

The initial director of UNEP was Maurice Strong, a Canadian who was unanimously elected to the position and served from 1972 to 1975. Notably, the most successful director in the history of UNEP was Mostafa Kamal Tolba, an Egyptian who held the position from 1975 to 1992. Tolba played a crucial role in elevating environmental considerations to the forefront of global thinking and action. One of the committee's widely acclaimed achievements was the historic 1987 Montreal Protocol, an agreement aimed at protecting the ozone layer. This accord has facilitated the gradual recovery of the ozone hole in Antarctica, with expectations of full recovery by 2050 and 2070 (defined as a return to 1980 levels). The Montreal Protocol was one of the first universally ratified treaties, undergoing eight revisions.

From the very beginning of its establishment, the committee has achieved other significant milestones, including sponsorship of solar loan programs, the implementation of

Marshland projects in the Middle East, and the initiation of its International Environmental Education Program. UNEP's diverse activities address issues related to the atmosphere, marine and terrestrial ecosystems, environmental governance, and the green economy. The organization has actively collaborated with national governments, regional institutions, and environmental non-governmental organizations in the development and implementation of projects. UNEP has been particularly engaged in funding and executing initiatives focused on environmental development.

The UNEP's activities are divided into seven thematic areas: encompassing climate change, natural disasters and conflicts, ecosystem management, environmental governance, chemical waste, environmental review, and resource efficiency. At the core of UNEP's work are the 17 Sustainable Development Goals (SDGs), unanimously adopted by all United Nations Member States in 2015. These goals serve as a collective blueprint for fostering peace and prosperity for both people and the planet, both now and in the future. The SDGs constitute an urgent appeal applicable to all countries, emphasizing the interconnectedness of ending poverty and other deprivations with strategies that enhance health and education, reduce inequality, stimulate economic growth, and address climate change for sustainable ecosystems.

UNEP strives to establish safeguard standards for its operations to ensure the trustworthiness of UN Environment among member states and funders. Despite the complexity of its operations, the UN Environmental Programme is actively working to identify the complete life-cycle costs of its operational decisions and aims to operate more sustainably while continually enhancing efficiency as a reliable implementing/executing partner over time. Ultimately, UNEP seeks to minimize potential risks and harm while strengthening the capabilities and credibility of UN Environment through robust partnerships within and outside the United Nations.

A pivotal moment in the organization's development occurred in 1988 when the World Meteorological Organization and UN Environment collaborated to establish the Intergovernmental Panel on Climate Change (IPCC). This committee, a part of the United Nations Development Group, serves as one of several Implementing Agencies for the Global Environment Facility and the Multilateral Fund for the Implementation of the Montreal Protocol.

The IPCC plays a crucial role in UNEP's program, bringing together internationally recognized scientific experts specializing in climate science, adaptation, vulnerability, and mitigations. While avoiding policy-descriptive statements, their reports hold significant importance for member states that request them. Despite refraining from explicit policy recommendations, the content of these reports remains relevant to the policies of member states. The most comprehensive assessment report to date is the AR5, involving experts from over 80 countries.

Another vital component of UNEP's governance is the UN Environmental Assembly, established in 2012 as the world's highest-level decision-making body on the environment. This assembly convenes governments, entrepreneurs, and activists to commit to pragmatic action. The upcoming sixth session, occurring every two years, will focus on the role of innovation in influencing the choices we make.

IV. Introduction to Agenda Item A: Enhancing the Management and Sustainable Disposition of Chemicals and Nuclear Waste

The global increase in solid and hazardous waste, a consequence of technological advancements, is a concerning trend. This committee will primarily concentrate on hazardous wastes, with the definition in this context aligning with the United Nations' characterization. According to the UN, hazardous waste is waste possessing toxic, infectious, radioactive, or flammable properties, presenting an actual or potential hazard to the health of humans, other living organisms, or the environment.

Management efforts for these wastes vary among nations and have evolved significantly in recent decades as our understanding of the issue has deepened. This year, the United Nations Environment Programme faces the responsibility of addressing the environmental threats arising from the improper disposal of hazardous waste, with specific emphasis on the following three areas stated as:

1. Collaborative international efforts to remediate contaminated sites.
2. Regulation of the trade of hazardous waste.
3. Disposal of waste resulting from the 2011 Tohoku earthquake and Fukushima Daiichi nuclear disaster.

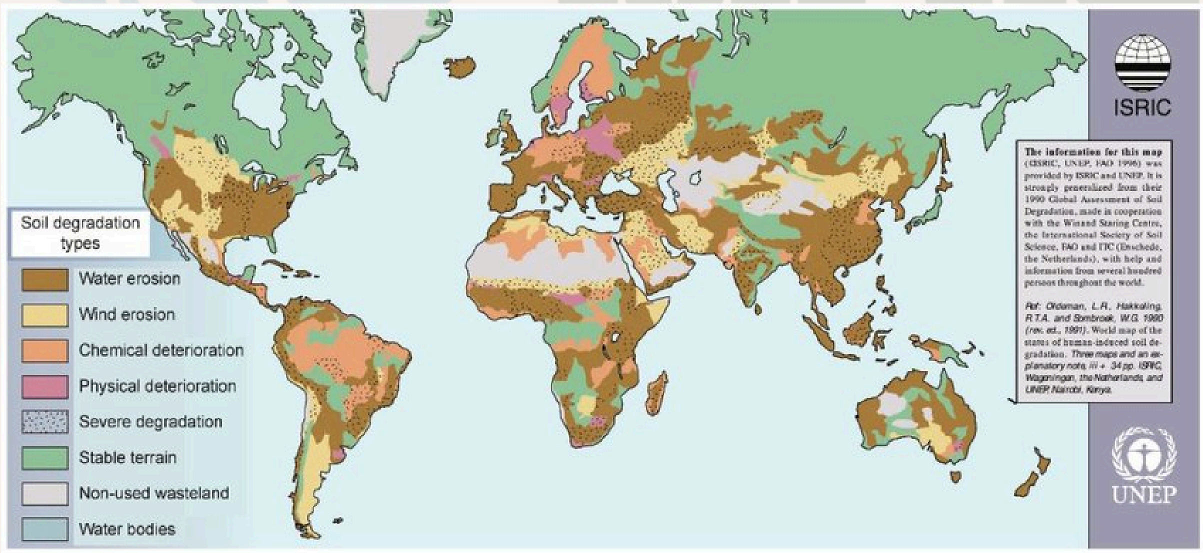
Not only limited with these unfortunate turn of events, it is crucial to remark the Love Canal of the Niagara Falls from the beginning of early 1940s, Bhopal gas leak in 1984, Chernobyl nuclear disaster of 1986 as they had enormous impacts, which will be furtherly mentioned in the historical view section of this guide.

Remarking that it is significant to be aware of, that a disaster is defined as an event causing disruptions to the normal functioning of society, whereas a catastrophe is considered a "mega disaster," indicating significant loss of human lives, property, and a need for substantial expenditure to restore it to its previous state.

The UNEP manages the International Register of Potentially Toxic Chemicals database to collect data on international hazardous waste management, as specified in the Basel Convention. The Bamako Convention of 1998, established by the African Union, emphasizes the prohibition of importing hazardous waste.

The management of hazardous waste is primarily undertaken by specialized companies such as Veolia Environment, Suez Environment, Waste Management, Republic Service, and Remondis (arranged by 2015 revenue). The export of toxic waste from developed to developing countries has witnessed a notable rise due to the persistent pursuit of continuous profit maximization and the "not-in-my-backyard" syndrome. This concerning trend has led to the activation of the Basel Convention. The origins of this pollution are elaborated upon in the subsequent points: "*Nonpoint source pollution cannot be traced to a specific spot. Point sources include wastewater treatment plants, overflows from combined sanitary and storm sewers, and industry discharges. Nonpoint sources include runoffs from urban, agriculture, and mining areas. Point and nonpoint sources have caused a wide range of water quality problems and the deterioration of the ecological state in rivers*".

Chemicals known as **Bioconcentration**, are absorbed by organisms like fish in their environment. This concentration has been steadily increasing. Pathogen pollution results in health issues due to water supply, fish, and estuary contamination. The water supply is crucial as it directly impacts crops, land, and human contact. Chemicals in agriculture that can dissolve in water, known as "water-soluble," mainly include nitrates and phosphates frequently utilized to accelerate the growth process.
A significant portion of agricultural chemicals comprises water-soluble nitrates and phosphates, frequently used to expedite the growth process. An erroneous practice involves using chemicals to eliminate unwanted organisms in crops, leading to the gradual endangerment of crops, birds, and an increase in potentially fatal human illnesses. Continuous soil degradation results in a decline in soil quality, eventually rendering the land infertile and unsuitable for agriculture. Various efforts have been observed to mitigate the long-term effects. It is advisable to explore other conventions, such as the Stockholm Convention, to gain insights into international agreements on toxic substances and its varieties as waste.



If you would want to derive further for your country's policy and data about chemicals and waste consumption, it would be beneficial to check this link:
https://sustainabledevelopment.un.org/topics/chemicalsandwaste/nationalreports

V. Key Vocabulary Related with the Subject

Radioactive Waste: Radioactive waste originates from diverse sources, including nuclear power generation, activities related to the nuclear fuel cycle, and the production and application of radioisotopes in fields such as medicine, agriculture, industry, and research. The indicator assesses both the present state of radioactive waste management and the advancements made over time in achieving the overall sustainability of radioactive waste management.
Exempt Waste: The type of radioactive waste which will be disposed as usual waste and concentrates a very low amount of radioactivity.
Low and Intermediate-Level Waste (LILW): Waste items such as paper, clothing, and laboratory equipment that have been in contact with radioactive substances, including radioactive soil and construction materials. This type of waste can be disposed of near the surface, as it contains only a low concentration of radionuclides.
High-Level Waste (HLW):
The focus here is on the fuel derived from a reactor or the byproducts generated during fuel processing. This generates a significant amount of heat, necessitating the need for cooling. Prompt efforts are made to transform this type of waste from a liquid to a solid state.
Very low level waste: Exempt waste and very low-level waste (VLLW) contain radioactive substances at levels deemed not harmful to humans or the surrounding environment. It primarily comprises materials from the dismantling or rehabilitation of nuclear industrial sites, including demolished items like concrete, plaster, bricks, metal, valves, and piping. Additionally, industries such as food processing, chemical, and steel generate VLLW due to the natural radioactivity concentrated in specific minerals used in their manufacturing processes.
Activity: By indicating the time of decomposition and the amount of radiation emission, the ratio can be stated as “the higher the activity, the more harmful it is becoming.”
Half-life: The half-life refers to the duration it takes for the activity of a substance to decrease to half of its initial level. If the half-life is relatively brief, the substance does not pose a threat in the waste disposal process.
Transuranic Waste (TRU): Specific kind of waste produced by nuclear weapons.
Liquid Waste: Liquid wastes, including sewage, household wastewater, processed water, or other fluids generated by industrial processes, especially in sectors such as pulp and paper production, food processing, and chemical manufacturing.

Chemical Waste

The effective handling of chemicals and waste is a crucial element of UNDP's initiatives aimed at achieving sustainable, inclusive, and resilient human development, aligned with the Sustainable Development Goals (SDGs). Chemicals play a vital role in the production of various goods, safeguarding human health, and contributing significantly to

GDP and employment. However, without proper management practices, chemicals and their hazardous byproducts can pose substantial risks to both human health and the environment. Adverse health effects range from immediate poisoning to long-term consequences like cancer, birth defects, neurological disorders, and hormone disruption, disproportionately affecting the most economically vulnerable individuals globally.

Especially in urban settings and among minority populations, people often face exposure to hazardous chemicals and associated contaminants either through their occupations or residence in polluted areas. In rural areas, the misuse of agricultural chemicals and contamination brought by waterways contribute to most chemical exposure and environmental pollution, impacting the natural resources crucial for the livelihoods of these communities.

With over 100,000 different substances in use, chemicals have become an integral part of daily life, influencing employment, trade, and economic growth worldwide. Virtually every industry involves the use of chemical substances, underscoring their ubiquitous role across various economic sectors. Environmental repercussions range from affecting sensitive species and ecosystems to broader issues such as water body eutrophication and stratospheric ozone depletion. Chemical contamination is pervasive on both land and in water, exposing people through occupational activities, daily consumption of contaminated drinking water and food, inhalation of polluted air (both outdoors and indoors), and direct skin contact. UNDP's expertise extends to managing chemicals harmful to human and environmental health, encompassing Persistent Organic Pollutants (POPs), Ozone Depleting Substances (ODS), Mercury, Lead, and other heavy metals. The organization assists countries in enhancing their waste management systems, covering waste prevention, reuse/recycling, treatment, and disposal. UNDP is also actively involved in the safe and effective treatment of hazardous medical waste, exemplified by its efforts during the Ebola crisis in West Africa, utilizing innovative technologies.

Despite these efforts, the continued global growth in production, trade, and use of chemicals places an escalating burden on developing countries and those with transitioning economies, which often lack the capacity to address such intricate challenges. By 2020, it is anticipated that developing countries will lead the world in the growth rate of high-volume industrial chemicals, increasing their share of global chemical production to 31%. Furthermore, chemical consumption in developing countries is projected to grow significantly faster than in developed countries, potentially accounting for a third of global consumption by 2020.

Although chemicals play a significant role in promoting national economies, it is crucial to implement effective management practices throughout their life cycle. Without proper oversight, these substances, despite their economic benefits, can pose substantial threats to both human health and the environment, resulting in considerable costs for national economies. Notably, a clear connection exists between poverty and an elevated risk of exposure to toxic and hazardous chemicals, particularly affecting the impoverished population exposed to high poisoning risks due to their occupations, living conditions, and limited awareness of appropriate chemicals management.

Simultaneously, the global economy is witnessing a rapid surge in the generation of hazardous wastes. While conventional hazardous wastes primarily originate from industrial and manufacturing activities, substantial amounts are also produced in non-industrial sectors, encompassing waste from wastewater treatment plants, used oils, and discarded batteries. Hazardous wastes not only present inherent risks and dangers but also have the potential to contaminate large volumes of otherwise non-hazardous waste if improperly mixed. Hence, the proper segregation, treatment, and disposal of hazardous wastes are of paramount importance.

Recognizing these challenges, the United Nations Environment Program has established a Chemicals and Waste subprogramme. This initiative aids countries and regions in effectively managing chemical substances and waste, encompassing categories such as Persistent, Bioaccumulative, and Toxic Substances (PBTs); carcinogenic, mutagenic, or reproductive-harming chemicals; those with immediate hazards (acutely toxic, explosive, corrosive); globally concerning substances like Persistent Organic Pollutants (POPs), greenhouse gases, and ozone-depleting substances (ODS); healthcare wastes; and electronic wastes (E-wastes).

Here is a link of an interactive map of UNDP portfolio on chemicals and waste management below:
http://www.undp.org/content/undp/en/home/ourwork/sustainable-development/natural-capital-and-the-environment/chemicals-and-waste-management.html

Nuclear Waste

Historical View

The production of nuclear waste has had a significant impact since its inception between 1895 and 1945. In the latter years of its development, the primary focus was on enhancing and utilizing nuclear bombs. In 1949, the Atomic Energy Commission (AEC) conducted a seminar on radioactive waste, where the significance of managing nuclear waste was underestimated. It was not perceived as a looming threat but rather regarded as something of little importance to be disregarded. The Atomic Energy Act of 1954 granted rights, including the construction of large reactors near cities to meet energy needs. By 1955, an agreement was established with the National Academy of Sciences (NAS) to initiate the study of potential issues posed by radioactive waste, specifically in the United States. By 1969, concerns started emerging regarding the burial of nuclear waste.

In 1981, Britain mandated the above-ground storage of nuclear waste for 50 years before burial, pending the selection of a geological repository in 2006. The assessment of potential damages associated with this type of waste was initially limited, with many countries, such as Germany, primarily testing in salt formations until positive results were identified by a laboratory in 1979, prompting the search for a waste-management center. In the 1980s, civil society initiated widespread protests in numerous countries, advocating for the cessation of nuclear plant construction and calling for shutdowns.

Current Situation

Nuclear energy serves as a significant provider of power and energy resources, contributing approximately 17% of global electricity, thus playing a substantial role in contemporary living standards. However, the explosive potential of nuclear substances poses safety threats.

Currently, there is no viable solution for the disposal of nuclear waste, leading to a halt in the construction of new reactors. The hazardous nature of nuclear waste is expected to persist for thousands of years, with uncertain implications and dangers for future generations. Efforts, such as the Yucca Mountain repository, have been made to address this issue. However, since the radioactivity of these substances cannot be eliminated, governments are uneasy as waste management facilities must adhere to radiation guidelines, which are often challenging to meet. Consequently, licenses may be revoked, hindering facility operations.

Nuclear waste often originates from the milling of uranium, consisting of sand-like material. In 2006, annual uranium production reached 40-50,000 tonnes. A UNEP report on nuclear waste emphasizes key considerations, stating that a single 1000 MW light-water reactor generates approximately 100 meters of Low-Intermediate Level Waste (LILW) and disposes of about 30 tonnes of spent fuel each year. If this spent fuel is designated for direct disposal, it comprises about 50 square meters.

As we observe the situation of sea disposal, in the earlier years, guidelines and definitions established by the 1972 London Convention permitted the disposal of low- and intermediate-level wastes at various sites.

The Fukushima nuclear disaster in 2011 exemplifies how natural events like earthquakes can lead to catastrophic consequences if a nuclear plant is damaged. This incident highlighted the global repercussions of such events, as evidenced by the contamination of groundwater. Another noteworthy event is the Chernobyl nuclear disaster of 1986. Additionally, historical incidents such as the 1945 Hiroshima, the 1969 Lucens reactor, and the 1997 Tokaimura also merit examination.

There are three main steps in the processing of nuclear waste stated as: pre-treatment, treatment and conditioning.

Pre-treatment: Pre-treatment readies the waste for further processing, involving actions like sorting and segregating to distinguish contaminated items from uncontaminated ones. In certain cases, it becomes essential to decrease the waste's size through methods like cutting or shredding to enhance subsequent processing efficiency. Decontamination methods are employed to decrease the volume of waste that needs treatment, subsequently reducing the cost associated with its disposal.

Treatment: After adequately preparing the waste, the subsequent stage involves treatment to improve its safety and lower the expenses associated with subsequent management stages like storage or disposal. Typically, treatment procedures aim to diminish the volume of radioactive waste by isolating the radioactive element from the overall waste, often altering the waste's composition in the process. Various processing steps for waste treatment are available, chosen based on the waste's characteristics and the acceptance criteria of the selected disposal site. Two prevalent treatment methods include solid waste incineration and liquid waste evaporation.

Conditioning: The third stage in the process, known as conditioning, transforms the waste into a secure, stable, and manageable state, facilitating its transportation, storage, and disposal. Conditioning methods are developed to impede the gradual release of radionuclides from the waste package into the environment. Typically, waste is conditioned for disposal through encapsulation or solidification using materials like cement, bitumen, or glass, or it may be over-packed into specialized containers.

V. Focused Overview

For approximately a century, there has been significant global interest in nuclear power due to its substantial electricity production. Nuclear reactors, releasing nuclear energy, are employed for this purpose. A 2013 report from the International Atomic Energy Agency (IAEA) indicated the existence of 437 operational nuclear reactors in 31 countries, contributing to over 11% of the world's electricity. However, not all reactors serve electricity generation, as nuclear energy can also be utilized for developing nuclear weapons. Moreover, 140 naval vessels rely on nuclear power as their primary energy source.

While nuclear power offers continuous, reliable, and low-carbon base-load power, it comes with notable drawbacks. Instances of accidents, such as the Chernobyl disaster, Three Mile Island accident, and Fukushima Daiichi nuclear disaster, have occurred in both power plants and submarines. These incidents not only pose threats to a country's economy but also have severe consequences for its flora and fauna, rendering areas uninhabitable due to highly toxic nuclear radiation.

Despite the relatively infrequent occurrence of nuclear accidents compared to other energy sources, the impact is disproportionately severe and deadly. Additionally, the production of nuclear energy generates radioactive waste, posing hazards to various forms of life and the environment.

Recognizing these challenges, numerous organizations, including the UN, are actively engaged in seeking solutions to safeguard the environment, flora, and fauna while still harnessing the benefits of nuclear power as a convenient energy source.

Nuclear waste is the transformed state of fuel after undergoing utilization in a nuclear reactor. In appearance, it closely resembles the initial reactor input; however, due to the transpired nuclear reactions, the composition of this waste differs. Initially, the fuel primarily comprised uranium, oxygen, and steel. Post-reactor use, a significant portion of the uranium atoms has undergone fission, resulting in a variety of isotopes spanning nearly all the transition metals on the periodic table of elements. Following that explanation of reasons, an information regarding the issue can be stated, as per the International Atomic Energy Agency (IAEA), a nuclear reactor capable of meeting the energy requirements of a city the size of Amsterdam (equivalent to a 1000MW nuclear power station) generates approximately 30 tons of densely packed high-level solid waste annually without fuel reprocessing. To provide context, a 1000MW coal plant, in contrast, would yield 300,000 tons of ash each year. Presently, on a global scale, nuclear power generation results in the production of 10,000 cubic meters of high-level waste annually.

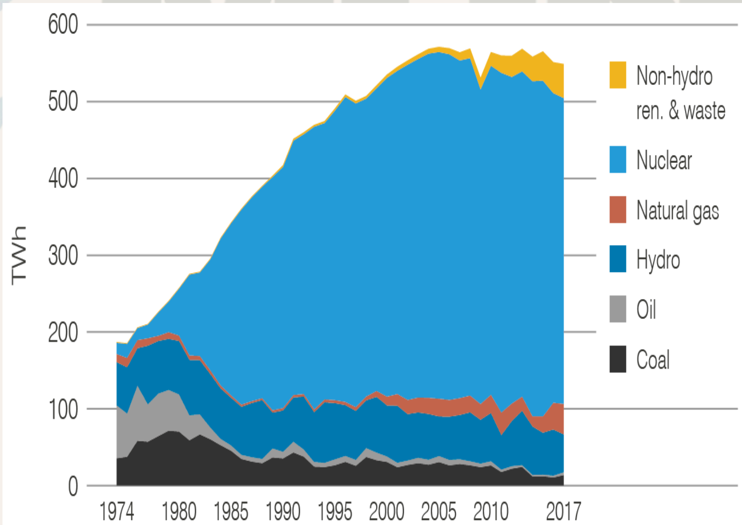
To delve into the problem from the view of possible health impacts, radioactive materials emit ionizing radiation, possessing enough energy to displace electrons from atoms or even break chemical bonds. According to the US Environmental Protection Agency, ionizing radiation can uniquely damage any living tissue in the human body. Although the body attempts to repair such damage, there are instances where the nature of the damage prevents complete restoration, potentially leading to the formation of cancerous cells.

Health effects resulting from radiation can be broadly categorized into two types: stochastic and non-stochastic, as detailed in the book "Fukushima: Dispossession or Denuclearization?"

Stochastic Health Effects: Long-term, low-level exposure to radiation is associated with stochastic effects. While increased exposure heightens the likelihood of these effects, it does not impact the type or severity of the outcome. Radiation-induced changes in DNA, termed mutations, can be either teratogenic or genetic. Teratogenic mutations, resulting from fetal exposure in the uterus, affect only the exposed individual, while genetic mutations are passed on to offspring.

Non-Stochastic Health Effects: Exposure to high levels of radiation triggers non-stochastic effects, intensifying with increased exposure. Short-term, high-level exposure is termed "acute" exposure. Unlike cancer, health effects from acute exposure to radiation manifest quickly and include burns and radiation sickness, also known as "radiation poisoning." Radiation sickness can lead to premature aging or death, with fatal doses typically resulting in death within two months.

On the other hand, as discussing in the committee of the UN Environmental Programme, while all power plants are subject to regulatory measures aimed at safeguarding human life and the environment, there are significant environmental implications associated with various power generation technologies. Unlike fossil fuel-based power generation, nuclear power plants do not release carbon dioxide, sulfur dioxide, or nitrogen oxides during electricity production. However, environmental impacts arise during the uranium mining, enrichment, and transportation processes, leading to the emission of fossil fuel waste. Nuclear power plants utilize substantial amounts of water for steam generation and cooling purposes. Some facilities extract significant volumes of water from lakes or rivers, potentially impacting fish and other aquatic life. The water used in power plant systems, including nuclear ones, accumulates heavy metals and salts. These pollutants, combined with the elevated temperature of the discharged water from the plant, can detrimentally affect water quality and aquatic ecosystems. According to the US Environmental Protection Agency, nuclear power plants may discharge small quantities of tritium and other radioactive elements within the limits established by their individual wastewater permits.



VI. History of Events

In the period from 1895 to 1945, nuclear waste gained prominence due to its extensive production. The latter part of this era, particularly the years leading up to 1945, witnessed a predominant focus on the development and utilization of nuclear bombs. In 1949, the Atomic Energy Commission (AEC) organized a seminar on radioactive waste, where waste management was not perceived as a significant concern. Rather, it was regarded with indifference and not considered a looming threat.

The Atomic Energy Act of 1954 conferred certain rights, including the construction of large reactors near cities to meet their energy needs. By 1955, an agreement with the National Academy of Sciences (NAS) was established to initiate the study of potential issues associated with radioactive waste, specifically in the United States. Concerns regarding the burial of nuclear waste began to emerge around 1969.

In 1981, Britain implemented a policy mandating the above-ground storage of nuclear waste for 50 years before burial, pending the selection of a geological repository, a decision reached in 2006. Until 1979, testing potential damages from such waste was primarily limited to salt deposits in various countries, including Germany. Positive results from a laboratory in 1979 prompted the initiation of a search for a waste management center. During the 1980s, civil society initiated significant protests across various countries, advocating for the cessation of nuclear plant construction and pushing for shutdowns.

VII. Major Stakeholders Involved and Their Views

An IAEA report reveals substantial advancements in the secure and efficient handling of radioactive waste and spent nuclear fuel resulting from the increased use of nuclear technology for electricity generation and various other applications by numerous countries. The report, titled "Status and Trends in Spent Fuel and Radioactive Waste Management," presents a comprehensive review of approaches for managing spent fuel and radioactive waste. It includes details on national inventories, anticipated future waste and spent fuel generation, and strategies for their prolonged and safe management. The European Commission, the OECD Nuclear Energy Agency, and the World Nuclear Association have collaborated to contribute to this report.

The report conveys several key points:

- A majority of countries are actively taking significant measures to dispose of various types of nuclear and radioactive waste, with over 80% of the total volume of solid radioactive waste currently being disposed of.
- In terms of overall volume, approximately 95% of existing radioactive waste exhibits very low-level (VLLW) or low-level (LLW) radioactivity. Intermediate-level waste (ILW) accounts for about 4%, and high-level waste (HLW) is less than 1%.

- From the inception of nuclear electricity production in 1954 to the end of 2016, approximately 390,000 tonnes of spent fuel were generated. Two-thirds of this amount is in storage, while the remaining third has undergone reprocessing.
- Adequate funding mechanisms for decommissioning and radioactive waste disposal are well-established in most countries. Numerous projects are in progress to dispose of spent fuel and HLW.
- Recent years have seen increased public involvement during the selection of disposal sites. A comprehensive understanding and projection of the national radioactive waste and spent fuel inventory are crucial for planning their secure and efficient management. To assist countries in this endeavor, the IAEA, in collaboration with the European Commission and the OECD/NEA, launched the Spent Fuel and Radioactive Waste Information System (SRIS) in June 2020. This tool facilitates information sharing and streamlines national reporting in a user-friendly platform.
- The report underscores globally accepted technical solutions for the safe and sustainable management of spent fuel and radioactive waste. Various industrial-scale methods exist for the secure processing, packaging, storage, and disposal of ILW, LLW, and VLLW. DGR projects for spent fuel and HLW disposal are well underway, with Finland expected to commence DGR operations in the mid-2020s. Licensing or site selection for similar facilities is well advanced in Canada, France, Sweden, and Switzerland.
- However, prolonged storage periods for spent fuel, resulting from the current lack of disposal capacity or limited recycling implementation, necessitate additional storage capacity worldwide. Several countries are addressing this by constructing new storage facilities either within or outside reactor buildings, or as centralized national facilities.
- The report also emphasizes a wide range of research and development (R&D) efforts dedicated to enhancing the management of spent fuel and radioactive waste. The potential deployment of new reactor types and advanced fuel cycles could impact waste management in countries adopting such technologies. For instance, the wider use of fast neutron reactors and associated closed fuel cycles could substantially reduce the volume and toxicity of spent fuel and HLW, thereby minimizing the required footprint of future DGRs. While R&D holds promise in this field, it is currently too early to estimate the future benefits of these developments.

United States of America: The nuclear waste predicament in the United States ranks among the most critical issues in industrial waste disposal. Despite this challenge, there are potential nuclear recycling methods that could mitigate concerns associated with containment and burial of these wastes. As the United States endeavors to locate a new disposal facility, scientists and policymakers grapple with the escalating volume of the country's nuclear waste and the absence of a clear strategy.

Initially, the proposed nuclear waste storage facility was slated for construction beneath Yucca Mountain in Nevada, intended to serve as a long-term storage solution for all national nuclear waste. However, Forbes reports that the site faced defunding under the

Obama administration in 2011 and is no longer under consideration for use. Presently, the nation's nuclear waste is scattered across 79 temporary facilities spanning 34 states. The current official government stance is to identify a new singular, permanent site, with projections indicating a facility could be operational in around 35 years, as reported by the Arizona Daily Star.

According to a report from the Oak Ridge National Laboratory, the total amount of nuclear waste in the United States is approximately 70,000 metric tons, with an additional estimated 40,000 metric tons expected to be generated by around 2033.

France: France stands out as a country with a substantial reliance on nuclear power, as evidenced by 58 nuclear power reactors contributing to almost 72% of its electricity production in 2018. While this nuclear energy plays a pivotal role in France's power generation, it also results in the generation of a considerable volume of spent fuel and radioactive waste.

Experts in France credit the effectiveness of the national spent fuel policy, coupled with stringent legislation and a robust regulatory framework, to the standardized nature of its nuclear fleet and the practice of recycling spent fuel. This approach ensures a secure and efficient energy supply while concurrently minimizing the burden of radioactive waste.

By engaging in recycling processes, it is possible to recover as much as 96% of the reusable material found in spent fuel. According to France's 6th National Report under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, the country's commitment to recycling spent fuel has resulted in a 17% reduction in the need for natural uranium to operate its plants compared to scenarios without recycling. Orano, the French company responsible for nuclear fuel cycle activities, including supplying fuel and managing waste from the nation's nuclear power plants, emphasizes a strategy focused on reprocessing spent fuel while optimizing the energy yield of nuclear fuel. Reprocessing activities take place at the La Hague reprocessing plant and the Marcoule MOX fuel manufacturing plant.

Since its initiation in the mid-1960s, the La Hague plant has safely processed over 23,000 tonnes of spent fuel, equivalent to powering France's nuclear fleet for 14 years. The process involves transporting used fuel assemblies from various nuclear power plants to La

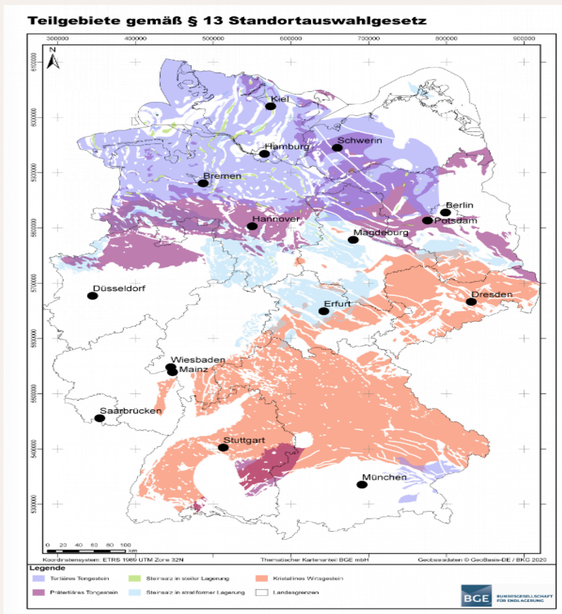
Hague, where they undergo storage in a pool. Subsequently, components are separated, and recyclable materials are recovered. Plutonium is then combined with depleted uranium at the Melox facility to produce MOX fuel.

Russia: The foremost concern in Russia is water pollution, with access to safe drinking water available to less than half of the population. While industrial water pollution has decreased due to a decline in manufacturing, municipal waste poses an increasing threat to crucial water sources. Additionally, there is a risk of nuclear contamination leaching into key water sources. The head of Russia's environmental protection committee estimates that the cost of bringing the entire drinking water supply in compliance with official standards could be as high as $200 billion. The extensive and costly nature of nuclear waste and chemical munitions contamination suggests that remediation efforts are likely to be limited, often involving the mere fencing off of affected areas.

The Russian government's tendency to treat certain information related to nuclear waste and chemical weapons as a state secret complicates Western cleanup assistance programs. New classifications of environment-related information as secret were introduced in response to disclosures about environmental issues at Russian military bases by former military officers. In the Chelyabinsk region, highly radioactive waste dumped into a nearby river system from 1948 to 1951 has migrated over 1,500 kilometers to the Arctic Ocean. Additional waste stored in open ponds at Chelyabinsk is seeping into a nearby river.

In Tomsk and Krasnoyarsk, liquid radioactive waste injected into sandy layers beneath the sites is gradually migrating. Without sustained long-term monitoring by Russia, there is a risk that the waste could seep into local and regional water supplies, posing a threat to human health and causing environmental degradation.

Germany: A team of experts from the International Atomic Energy Agency (IAEA) has acknowledged Germany's commitment to advancing its national radioactive waste management (RWM) program since the last review in 2019. The review team observed that most of the initial recommendations and suggestions had been addressed. They advised Germany to maintain a consistent approach in future activities related to cost assessment within the RWM program.



Conducting a six-day follow-up mission, the Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning, and Remediation (ARTEMIS) team provided the first IAEA follow-up to an ARTEMIS mission held from November 7 to 12. Germany has decided to phase out electricity generation from nuclear power plants, with the three remaining operational plants initially planned for closure by the end of 2022. However, due to the ongoing energy crisis, these reactors, totaling 4000 MW(e) in net capacity, will remain operational until at least April 15, 2023. Given Germany's extensive history of nuclear power, involving a total of 33 reactors, including the three currently operational, significant amounts of radioactive waste will result from decommissioning activities, necessitating safe storage until proper disposal is possible.

Presently, Germany lacks a facility for receiving radioactive waste, with the Morsleben disposal facility ceasing waste acceptance and undergoing closure. A new facility for low and intermediate-level waste is under construction at the former iron ore mine site Konrad, while a nationwide search is underway to identify a location for a high-level radioactive waste disposal facility.

The review team noted Germany's successful implementation of many recommended actions from the 2019 mission. Out of three recommendations and 12 suggestions identified initially, two recommendations and two suggestions require further development. These include updating the cost assessment for the national waste management program in the Cost Report with a consistent approach across all activities, analyzing risk and uncertainty during the cost assessment update, evaluating whether geosphere requirements for non-heat generating waste differ from those for high-level waste, and utilizing the radioactive waste inventory for ongoing monitoring and demonstrating waste minimization.

South Korea: Since the early 1980s, the Korean government has been actively working towards securing a disposal site for the safe handling of radioactive waste. The 249th meeting of the Atomic Energy Commission (AEC) in September 1998 laid the foundation for the "National Radioactive Waste Management Policy." This policy aimed to complete the construction of a Low and Intermediate Level Radioactive Waste (LILW) disposal facility by 2008 and a centralized spent fuel interim-storage facility by 2016. However, the site selection process faced challenges, leading to a revision of the policy at the 253rd AEC meeting on December 17, 2004. The revised policy maintained the goal of completing the LILW disposal facility by 2008, while decisions regarding the national policy for spent fuel management, including the construction of the centralized spent fuel interim-storage facility, were to be made through timely consultations and consensus-building among stakeholders.

Key points from the national policy statements include:

Direct Government Control:

- The government shall take direct responsibility for the long-term safe management of radioactive waste.

Top Priority on Safety:

- Radioactive waste management will prioritize safety, considering biological and environmental impacts to protect individuals, society, and the environment from radiation's harmful effects. International norms on radioactive waste management safety will be observed.

Minimization of Radioactive Waste Generation:

- Efforts will be made to minimize the generation of radioactive waste.

"Polluter Pays" Principle:

- Expenses related to radioactive waste management will be imposed on the generator of radioactive waste at the point of generation, without imposing an undue burden on future generations.

Transparency in Site Selection:

- The radioactive waste management project will be conducted transparently and openly. The site selection process will be transparent, fostering harmony with the local community and promoting community development.

South Korea plans to select a site for permanent storage of its high-level radioactive waste by 2028 and is considering storing spent nuclear fuel overseas. In the meantime, it aims to expand temporary storage facilities at its 25 nuclear plants, with some sites reaching capacity from 2019. Despite being a significant user of nuclear power, South Korea has yet to find a permanent solution for its spent nuclear fuel. The government advisory body suggested building a temporary facility from 2030 and considering permanent storage underground from 2050. South Korea intends to select a site within the next 12 years, including an underground research laboratory for safety checks. The country, planning to build 11 more nuclear reactors by 2029, faces pressure to manage the increasing nuclear waste issue. South Korea's reactors currently produce around 750 tonnes of spent fuel annually. The nation is under a civil nuclear pact with the U.S., restricting spent fuel reprocessing, but an agreement allows easier movement of spent fuel to a third country. Last year, South Korea opened a permanent underground storage site for low-to-medium level radioactive waste.

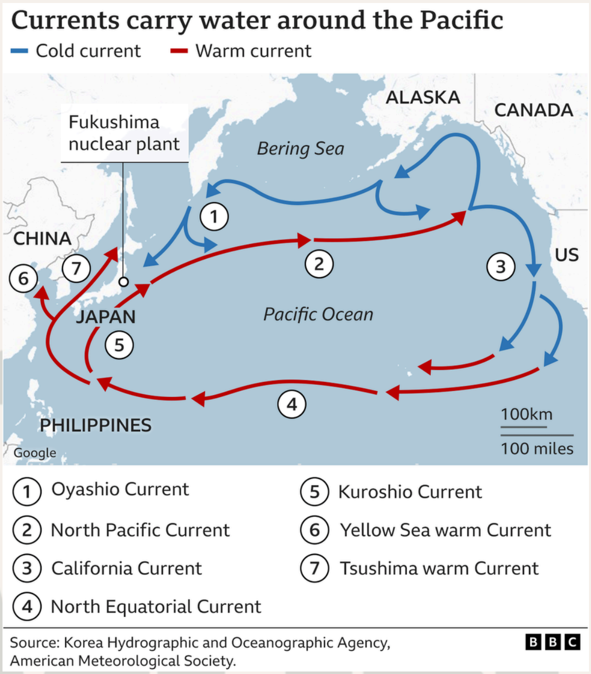
Japan: Following the catastrophic 2011 earthquake and tsunami that damaged the Fukushima plant, Tokyo Electric Power Co, the plant's operator, has employed seawater to cool its compromised reactor cores and prevent overheating. The resulting contaminated water, exceeding 1,000 large on-site storage tanks, poses space constraints, and Tepco asserts that ocean discharge is the sole practical solution.

To facilitate disposal, the radioactive liquid undergoes a five-stage Advanced Liquid Processing System (Alps), utilizing various chemical and physical procedures to eliminate nearly all of the 64 radionuclides (radioactive isotopes) in the contaminated water.

Tepco notes that tritium, an isotope of hydrogen generated in nuclear reactors and naturally by cosmic rays, is the only remaining significant radioactive material. Due to their identical

chemical composition, separating water molecules containing tritium from non-radioactive hydrogen is technically unfeasible. Instead, the treated water containing tritium undergoes over 100-fold dilution with seawater before discharge into the ocean through a 1km-long pipe.
As per the Japanese government, the tritium concentration in the discharged water will be one-seventh of the World Health Organization's drinking water standard.

China: China is among the critics of Japan's decision to discharge nuclear wastewater into the ocean, with the Chinese foreign ministry calling Japan a saboteur of the ecological system. China has banned aquatic products from Japan since the release began, and reports of harassment of Japanese citizens in China followed. Despite criticism, most scientists believe the impact on the marine environment and seafood consumers is negligible. Similar discharges occur worldwide, including in China. After treatment, nuclear wastewater typically contains tritium and carbon-14, diluted to acceptable levels before being released into the ocean. While the U.S., U.K., and the International Atomic Energy Agency support Japan's plan, China has demonized Japan.



Interestingly, China's nuclear plants have discharged water with higher radioactivity levels than Fukushima's release plan in 2021. At least 10 Chinese nuclear plants discharged liquid effluents with over 4.5 quadrillion becquerels of tritium in a year, more than 200 times Fukushima's self-imposed annual limit.

IX. Evaluation of Previous Attempts to Resolve the Issue

The Director of the UN's International Atomic Energy Agency (IAEA), has committed to fostering international cooperation to address this situation. Several proposals and initiatives have been put forth:

South Australian Proposal (2016):

- Establish a facility for the disposal of international used nuclear fuel and intermediate-level waste.
- Develop a world-class waste disposal facility.
- Adopt a cautious and conservative approach.
- Envisioned as a 120-year project.
- Proposed as an alternative to national projects.

ARIUS and Europe – ERDO (2002):

- Successor to the Pangea proposal.
- Advocate for regional and international facilities for the storage and disposal of all types of long-lived nuclear wastes.
- Promote shared radioactive waste management approaches and facilities.
- Membership is open to participation.

ARIUS and the Gulf (2012):

- Recognize potential for significant cooperation among GCC countries in this domain.
- Propose the establishment of a regional repository in the Middle East with an estimated cost of $4 billion.

Fuel Leasing:

- Utility leases fabricated fuel from a supplier, often located in another country.
- After use, the supplier takes back the spent fuel.
- Primarily applicable to Russian-built nuclear power plants.

Russia:

- Russia, with 20 members, supports a fuel repository situated 7000 km east of Moscow.

X. Possible Solutions

Handling high-level wastes (HLW)

The utilization of nuclear fuel results in the generation of high-level wastes, which can be categorized as either waste from fuel rods or waste produced during the reprocessing of fuel. In both scenarios, the volume of generated waste is relatively small, with an average nuclear reactor yielding approximately 27 tons of used fuel, which can be reduced to 3m3 per year in vitrified waste form.
Typically, used fuels are stored in dedicated ponds linked to individual reactors or shared ponds serving multiple reactor sites. In the case of reprocessing used fuel, the high-level wastes consist of intensely radioactive fission products and some long-lived radioisotopes of transuranic elements. These by-products are separated from the used fuel to enable the recycling of uranium and plutonium. If the wastes resulting from reprocessing are in liquid form, they must undergo solidification.
In situations where used reactor fuel is not subjected to reprocessing, it retains all its radioactive isotopes. Consequently, the entire fuel assembly is treated as high-level waste and designated for disposal. However, considering its substantial uranium content, there is growing reluctance to irreversibly dispose of it, recognizing its inherent value as a valuable resource.

Utilizing Used Fuel through Recycling

"Any utilized nuclear fuel will inherently retain a portion of the original U-235, along with various plutonium isotopes generated within the reactor core, and the U-238. Collectively, these components constitute approximately 96% of the initial uranium and more than half of the original energy content. Reprocessing, a practice carried out in Europe and Russia, involves the separation of uranium and plutonium from the waste, enabling their recycling for utilization in another nuclear reactor. Plutonium obtained through reprocessing is reused in a MOX fuel production facility, where it is combined with depleted uranium oxide to produce new fuel. European reactors presently consume over 5 tons of plutonium annually in fresh MOX fuel.

Significant commercial reprocessing facilities are in operation in France, the UK, and Russia, with a combined capacity of around 5000 tons per year and a cumulative civilian experience involving 80,000 tons over a span of 50 years. France and the UK also provide reprocessing services for utilities in other nations, with Japan being a notable example, having shipped over 140 consignments of used fuel to Europe since 1979. Historically, a substantial portion of Japanese used fuel underwent reprocessing in Europe, with the resulting vitrified waste, as well as the recovered uranium and plutonium, being returned to Japan for incorporation into fresh fuel. Russia similarly reprocesses spent fuel from Soviet-designed reactors located in various countries."

Storage and Disposal of Used Fuel and Other High-Level Waste (HLW)

"Approximately 230,000 tons of used nuclear fuel are currently held in storage, with around 90% stored in ponds. A significant portion of the global used fuel inventory has been in storage for extended periods, and there is no immediate urgency for final disposal from a logistical standpoint. Storage ponds, located at reactors and centralized facilities like CLAB in Sweden, have depths ranging from 7 to 12 meters to ensure several meters of water cover the used fuel. The fuel is arranged in racks, typically about 4 meters long, standing on end. These racks, composed of metal with embedded neutron absorbers, are submerged in circulating water, which serves both as a shield and coolant for the fuel. The ponds are robust structures constructed with thick reinforced concrete and steel liners. Reactor ponds are often designed to accommodate all the used fuel generated over the reactor's operational lifespan."

During the conference, participants will focus on crafting a resolution on the given topics, which include exploring how countries categorize nuclear waste, assessing the quantity of generated and anticipated nuclear waste, examining the risks associated with nuclear waste, understanding the various approaches governments adopt for nuclear waste management, and evaluating the costs involved in waste management along with the mechanisms for securing financing. This comprehensive analysis aims to address crucial aspects of nuclear waste management and foster informed decision-making.

XI. Introduction to Agenda Item B: Strengthening the Legal Framework to Empower Environmental Governance through the Transformation of Financial and Economic Structures

The intricate dance between economic growth and environmental conservation defines a critical global challenge. This agenda plunges into the deep waters of reshaping how money flows and laws operate to safeguard our planet. In our modern era, the pursuit of wealth often disregards the consequences for our surroundings. The interplay between economic activities and the health of our ecosystems is often lopsided. This discussion grapples with the notion of recalibrating our financial systems and legal frameworks to not just accommodate, but actively promote, a healthier planet.

This theme is a cornerstone of the United Nations' endeavors. Within the UN's array of global initiatives like the Paris Agreement and the Sustainable Development Goals (SDGs), lies a persistent effort to harmonize economic progress with environmental protection. This agenda aligns with these aspirations, seeking a symbiotic relationship between economic prosperity and environmental sustainability. At its heart, this conversation aims to overhaul how economies function without compromising our planet's well-being. It's about crafting regulations that incentivize both economic growth and ecological guardianship. We aspire to enact laws that not only foster economic dynamism but also anchor the preservation of our ecosystems at their core.

The discussion under this agenda resonates deeply with the United Nations' core ethos. It embodies the very essence of the UN's mission—a call for collective action, global cooperation, and multilateral diplomacy to navigate the complexities of our modern world. As delegates convene and brainstorm, they echo the UN's vision of a future where economic strides harmonize seamlessly with environmental preservation.

In the grand tapestry of global governance, this agenda item illuminates pathways toward a more sustainable future. It represents a collective effort to reimagine economic models, redirect financial flows, and fortify legal frameworks to uphold environmental integrity. This conversation is not just about finding a balance; it's about architecting a fundamental change in approach. It's a collective commitment to steering our economies onto a course where they not only thrive but also nourish the ecosystems upon which our existence depends.

Within this dialogue lie the seeds of innovation, collaboration, and transformative change. As discussions unfold, and proposals take shape, this forum mirrors the aspirations of the United Nations—a platform where diverse voices converge, ideas meld, and strategies materialize to sculpt a world where economic prosperity and environmental sustainability are not competing forces but complementary pillars of progress.

At its core, this agenda item embodies hope—a hope for a future where the pulse of economic growth reverberates harmoniously with the heartbeat of a thriving, resilient planet. It signifies a shared commitment to craft a legacy that transcends generations—one where prosperity isn't achieved at the cost of our environment but thrives in unison with its preservation.

XII. Key Vocabulary Related with the Subject:

Environmental governance: The system, structures, processes, and actions through which societies manage and make decisions about their natural resources and the environment. It encompasses the policies, laws, regulations, and institutions that guide and regulate human interaction with the environment.

Green finance: A type of financial activities that support the transition to a low-carbon, sustainable economy while addressing global challenges we face today, such as climate change and emerging environmental and sustainability risks.

Green bonds: A type of debt issued by public or private institutions to finance themselves and, unlike other credit instruments, they commit the use of the funds obtained to an environmental project or one related to climate change.

ESG: Stands for environment, social and governance. This type of ethical investing strategy helps people align investment choices with personal values. ESG investors aim to buy the shares of companies that have demonstrated a willingness to improve their performance in these three areas.

SDG: Stands for The Sustainable Development Goals, otherwise known as the Global Goals, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity.

Financing for development: The United Nations (UN) characterizes Financing for Development (FfD) as the mobilization and enhanced utilization of financial resources to attain both national and international economic conditions necessary for meeting globally agreed-upon development objectives. The FfD goals, initially outlined by the Millennium Development Goals (MDGs) from 2000 to 2015, were succeeded by the Sustainable Development Goals (SDGs) in 2015. The SDGs were introduced through the 2030 Agenda for Sustainable Development, marking a shift in the overarching paradigm.

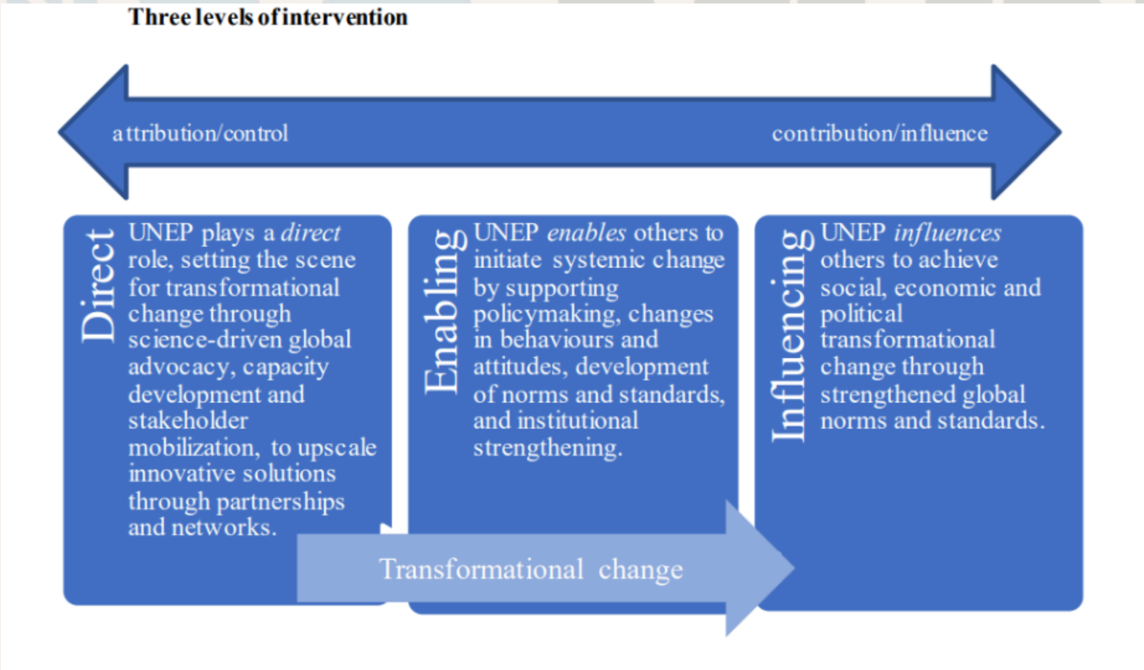
Sustainable investing: Describes a variety of strategies where investors seek financial gains while concurrently fostering enduring environmental or social benefits. The integration of conventional investment methods with insights into environmental, social, and corporate governance (ESG) has resulted in investors conducting more thorough analyses and improving their investment choices.

Financial responsibility laws: Financial responsibility laws, typically linked with automobiles, are regulations mandating individuals or businesses to show they can cover costs arising from an accident. These laws don't necessarily demand insurance coverage. Instead, they insist on proving the ability to financially handle the entire damage amount, irrespective of fault.

Carbon pricing: There are two main types of carbon pricing: emissions trading systems (ETS) and carbon taxes.

- An ETS – sometimes referred to as a cap-and-trade system – caps the total level of greenhouse gas emissions and allows those industries with low emissions to sell their extra allowances to larger emitters. By creating supply and demand for emissions allowances, an ETS establishes a market price for greenhouse gas emissions. The cap helps ensure that the required emission reductions will take place to keep the emitters (in aggregate) within their pre-allocated carbon budget.
- A carbon tax directly sets a price on carbon by defining a tax rate on greenhouse gas emissions or – more commonly – on the carbon content of fossil fuels. It is different from an ETS in that the emission reduction outcome of a carbon tax is not predefined but the carbon price is.

Greenhouse gases: also known as GHGs, are gases in the earth's atmosphere that trap heat.



XIII. Focused and Historical Overview:

In the records and background of the global history, the last century stands as a testament to humanity's evolving relationship with the environment. Throughout this period, the consciousness surrounding environmental stewardship and the imperative to recalibrate financial and economic systems has undergone a remarkable transformation.

The awakening toward environmental consciousness gained momentum following significant ecological disasters that left indelible scars on the planet. The Exxon Valdez oil spill in 1989 off the coast of Alaska was a pivotal moment, releasing nearly 11 million gallons of crude oil into pristine waters, devastating local ecosystems, and wildlife. This catastrophic event not only highlighted the perils of industrial advancement but also served as a clarion call for stringent environmental regulations governing economic activities.

The ensuing decades witnessed a seismic shift in economic ideologies. Initiatives like the United Nations Sustainable Development Goals (SDGs) galvanized global efforts toward responsible investing. ESG (Environmental, Social, and Governance) criteria emerged as essential metrics for evaluating corporate sustainability, prompting a fundamental reexamination of economic paradigms. The integration of environmental considerations into investment decisions has reshaped financial structures, with sustainability taking precedence over short-term profit maximization.

In parallel, the mounting specter of climate change has intensified the discourse on environmental governance. The scientific consensus on climate change reached a watershed moment, culminating in the Paris Agreement in 2015. This historic accord brought together 195 countries to pledge concerted efforts toward curbing greenhouse gas emissions and limiting global temperature rise. The Agreement stands as a cornerstone for aligning economic policies with environmental imperatives on a global scale.

The rise of green finance mechanisms has mirrored this growing environmental consciousness within financial sectors. Initiatives like green bonds, designed to fund projects with positive environmental outcomes, and carbon pricing schemes aimed at internalizing the cost of carbon emissions, have gained prominence. These mechanisms, often lauded as transformative instruments, not only aim to mitigate environmental damage but also redefine economic success within a framework that nurtures the planet's ecological balance.

At the heart of this paradigm shift lies the imperative of robust legal frameworks to enforce environmental responsibilities within economic activities. Stricter regulations governing industries, stringent enforcement mechanisms, and penalties for environmental violations are critical in fostering a sustainable economic ecosystem.

The revolution of environmental governance, unfortunately, remains incomplete. This is because although the revolution underscored the importance of new actors, regulatory arrangements, and effective mechanisms, it continues to focus on the environment as its own category of processes and outcomes. The very term “environmental governance” directs attention narrowly to a distinctive category: the environment. Such a narrowing of focus diverts analysis from the complex societal and political interactions that underpin seemingly environmental challenges. Analyses of these challenges additionally must attend to the interlinked human and environmental processes that shape how they unfold and to the multi-dimensional outcomes they produce. Useful and meaningful explanations of observed outcomes must therefore examine how environmental, societal, and economic dimensions of issues and their outcomes emerge together rather than treating each outcome in isolation.

If we would delve into the question from the view of support for environmental governance in climate action, nature action, and chemicals and pollution action should lay the groundwork for the following specific outcomes in each containing:

Climate Action:

1. Facilitation of public support and political engagement for climate action.
2. Integration of carbon neutrality and resilience into climate planning and policy frameworks at all levels.
3. Informed policymaking and decision-making for climate action through the latest science-based analysis and data generation.

Nature Action:

1. Coordination of collective action by United Nations entities to address biodiversity loss and promote conservation and restoration.
2. Enhancement of institutional capacity to adopt and act on national and international commitments, coupled with strengthened accountability frameworks.
3. Reduction of illegal and unsustainable use of biodiversity.
4. Sustainable and holistic governance of oceans at regional and global levels.
5. Strengthening commitments and actions to prevent, halt, and reverse the degradation of ecosystems.

Chemicals and Pollution Action:

1. Collaboration among United Nations entities for collective action addressing the sound management of chemicals and waste.
2. Shifting regional and national integrated policies toward sound management of chemicals and waste.
3. Enhancement of institutional capacity to adopt and act on national and international commitments.
4. Support for air pollution action, sustainable mobility, and clean energy.
5. Reduction of global plastics pollution.

Moreover, from the view of financial and economic transformations should contain the following outcomes for the climate action, nature action, and chemicals and pollution action:

Climate Action:

1. Aligning private and public financial flows with the Paris Agreement goals.
2. Strengthening transparency and accountability in government and non-government climate actions, including those from the private sector and finance community.
3. Incorporating sustainability- and climate-friendly standards and norms into the core values of the economy by the private sector and financial markets.
4. Enhancing sectoral partnerships and access to technologies for decarbonization, dematerialization, and resilience.

5. Catalyzing public support and political engagement for climate action.
6. Shifting societal preferences towards lower carbon products, sustainable lifestyles, and services.

Nature Action:

1. Accounting for and internalizing full costs and benefits of human activity in decision-making.
2. Aligning food systems with biodiversity and environmental sustainability.
3. Cultivating a sustainable ocean and coastal economy for prosperity and pollution-free development.
4. Directing public- and private-sector financial flows towards improved ecosystem management.
5. Adopting sustainable value chains, enhancing product comparability, and maximizing circularity.
6. Steering consumer awareness and behaviors towards products and services with lower environmental and nature footprints through digital nudging, green filtering, product labeling, certification schemes, and value-chain indices.

Chemicals and Pollution Action:

1. Shifting regional and national integrated policies towards the sound management of chemicals and waste.
2. Reducing land-based sources of pollution in fresh water and oceans, including marine litter and nutrients.
3. Supporting air pollution action, sustainable mobility, and clean energy.
4. Enhancing institutional capacity to adopt and act on national and international commitments.
5. Mainstreaming "3R" waste management systems. (Reduce, Reuse, Recycle)
6. Improving resource efficiency and circularity in key sectors.
7. Redirecting the economics of chemicals actions and waste and pollution reduction support away from harmful chemicals.
8. Catalyzing global advocacy for the phase-out of the most polluting products and practices.
9. Influencing markets, supply chains, trade, and consumer behaviors towards reduced pollution through transparency enabled by digital technologies.
10. Reducing global plastics pollution.

As your committee board, we would like to inform you more about the term **"green financing"** since it is actually one of the main discussions of this agenda item. To delve into the evolution of this term, in response to efforts at both national and international levels, a growing demand from investors for eco-friendly investments, and the influence of major industry organizations, there's been a surge in the creation of financial products related to environmental, social, and governance (ESG) factors.

Some key initiatives, like the Principles for Responsible Investment (PRI), Sustainability Accounting Standards Board, Task Force on Climate-related Financial Disclosure, and the European Union (EU) Taxonomy, aim to set common principles and standards, shaping how today's markets behave in terms of green financing.

Green finance involves different types of debt structures, broadly falling into three categories:

1. *Activity-based debt:* This includes things like green bonds and social bonds, which are used to raise funds for specific green projects or activities. For instance, the World Bank's first green bond in 2008 served as a blueprint for sustainable investing, and now green bonds contribute to funding all 17 Sustainable Development Goals (SDGs). Social bonds gained attention in 2020, seeing a significant increase in issued volumes due to the COVID-19 pandemic.
2. *Behavior-based debt:* This involves sustainability-linked bonds and loans. Unlike activity-based debt, these don't specify where the funds will go but instead set sustainability goals for the issuer. For example, a company might link its sustainability targets, like reducing greenhouse gas emissions or promoting workplace diversity, to its financing needs. Southern Company in the U.S. is an example of a company that recently introduced a sustainable financing framework, allowing them to issue various green finance products.
3. Transition bonds: This is a newer concept focusing on bringing financial resources to activities that aren't easily categorized as green but still contribute to environmental transition. Examples include projects related to energy efficiency, resource efficiency, gas transmission network retrofits, carbon/emission reduction, and others. Companies like Snam S.p.A., Etihad Airways, and the European Bank of Reconstruction and Development have issued transition bonds for such projects.

Furthermore, from the legal basis of the problem, it is crucial to have a comprehensive knowledge about the term **"fiscal policy"** and **"monetary policy".**

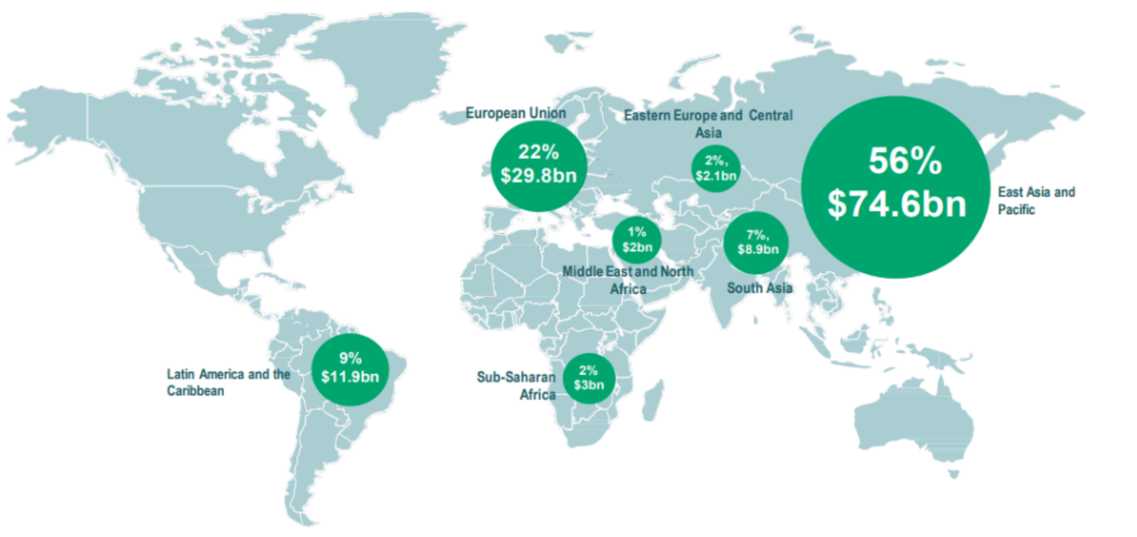
Governments influence the economy through fiscal and monetary policies, with fiscal policies addressing taxes and government spending, and monetary policies dealing with interest rates and inflation. The integration of Green Fiscal and Monetary Policy is vital for creating a more environmentally sustainable economy. However, many countries lack a comprehensive approach to these policies. Some focus on fiscal measures, such as phasing out fossil fuel subsidies, while monetary approaches are less common. Innovative initiatives often come from emerging economies with proactive central banks. The initial step involves ensuring existing policies do not encourage unsustainable practices, followed by implementing specific "green" policies like pollution taxes and investments in sustainable technologies. Effective governance structures for reviewing and recommending policy changes are crucial. The potential impact of fiscal and monetary policies on a green economy is significant, but success depends on the national context. Comprehensive reviews across all sectors tend to be the most effective, while weaker approaches may lack governance or focus on specific tools. The worst-performing governments have yet to align policies with green objectives, often contradicting sustainability goals.
(If you would want to learn more statistical information, it is recommended for you to check this link:
https://greeneconomytracker.org/policies/green-fiscal-monetary-policy)

XVIII. Major Stakeholders Involved and Their Views

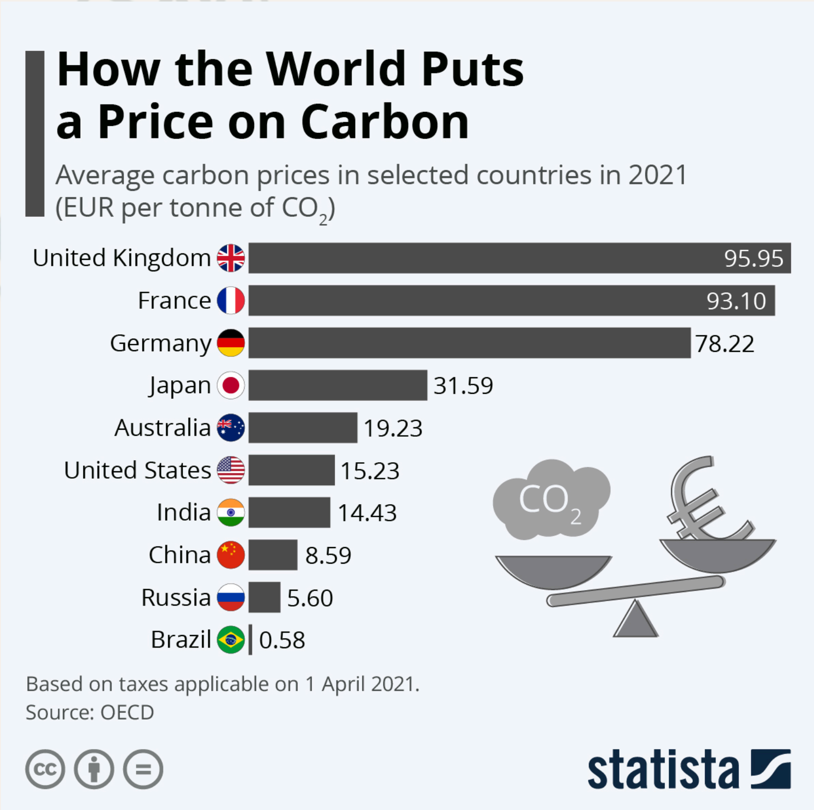
Official bodies, including entities like the UNFCCC, UNEP, OECD, and G20, play a central role in coordinating various finance sources for climate-related initiatives. Governments contribute through earmarked finance, institutional capacity, and project support at national, regional, and local levels. Development Finance Institutions, both multilateral (e.g., Inter-American, Asian, African Development Banks) and bilateral (e.g., JICA, KfW, UK Development Fund), are significant sources. Climate Funds, such as the Green Climate Fund and Adaptation Fund, operate on contributions from countries.

Green Investment Banks focus on financing projects with climate change mitigation and adaptation goals. International capital markets provide debt finance through instruments like green bonds. Domestic capital markets involve national issuance of green bonds, with Mexico being notably active. Corporations lead in climate finance, driven by consumer and shareholder demand for improved Corporate Social Responsibility (CSR) performance. Aid agencies support crucial but otherwise unfundable projects, while rating agencies assess climate risk and performance. The insurance industry plays a vital role, providing cover for climate impacts and contributing substantial finance through instruments like bonds. Community-focused approaches, like crowdfunding, enable fundraising for specific ideas and technologies, particularly in adaptation projects where communities have a stake. Foundations fund research impacting climate finance, addressing areas commercial funding may avoid. Overall, a diverse range of entities contributes to the landscape of climate finance.

Figure ES3 | Green finance commitments by geographic destination in 2018



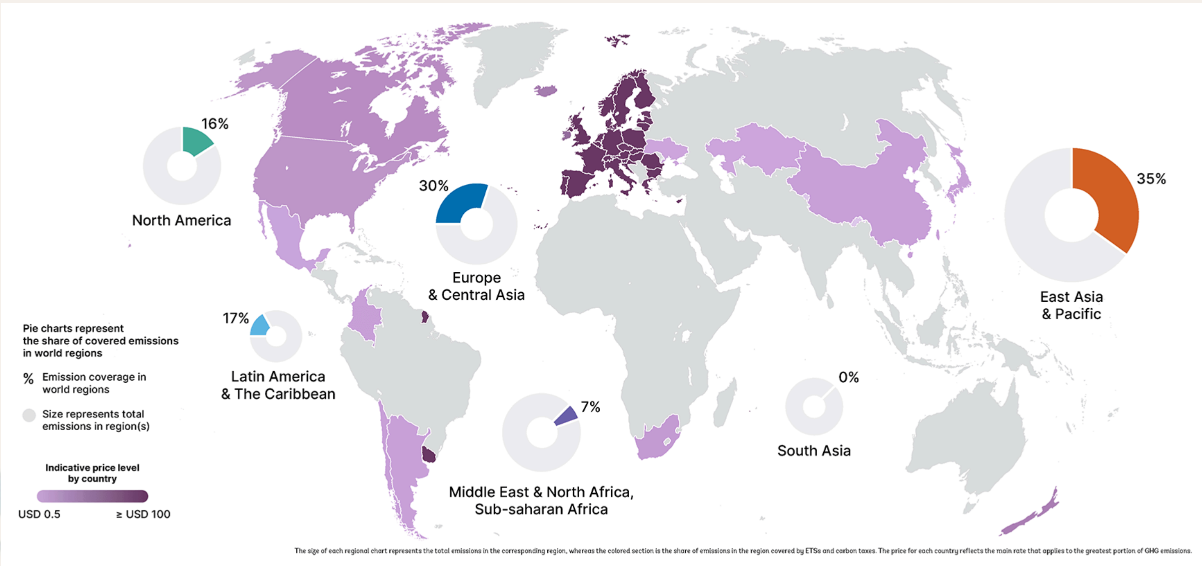
The majority of green finance was allocated to the East Asia and Pacific region, constituting 56% of total commitments, despite a 53% decrease from the $157 billion recorded in 2017. The European Union received the second-highest amount, making up 22% of the global total, with only a 7% decrease from 2017. Latin America and the Caribbean, as well as the South Asia regions, ranked third and fourth, representing 9% and 7% of the total green finance committed by IDFC institutions in 2018. Finance for Latin America and the Caribbean experienced a 15% decrease, while commitments for South Asia increased by 11% in 2018. These patterns align with the operational regions, mandates, and domestic preferences of IDFC members, considering well-understood home-country risks.
For adaptation efforts, the East Asia and Pacific region received the majority of finance, experiencing a significant increase of $10 billion in 2018, reaching a total of $12 billion and constituting 78% of total adaptation commitments. This region also received the highest share of mitigation finance at 54%, amounting to $57 billion in 2018. Additionally, for other environmental objectives, the East Asia and Pacific region secured 64% of the committed funds in this category.



Carbon markets are evolving with a focus on renewable energy and natural solutions. After two years of robust growth, the carbon credit markets experienced a slowdown in the past year, with a slight decline starting in 2021. A total of 196 million carbon credits were retired in 2022, reflecting a slight decrease in both the supply of new credits and demand from end users. Independent accreditation mechanisms and voluntary carbon markets remain the primary sources of credits, but credit emissions from international mechanisms like the Clean Development Mechanism (CDM) constituted 30% of the total issued.
The primary demand in the market comes from the voluntary corporate use of carbon credits, while more nations are contemplating the establishment of their own carbon credit

mechanisms, often linked with carbon tax or Emission Trading System (ETS) policies. For instance, New Zealand is set to become the first country globally to impose a price on agricultural emissions by 2025, independent of its existing ETS.

Renewable energy remains the dominant force in carbon markets. The share of carbon credits from renewable energy activities has been consistently increasing since 2018, accounting for approximately 45% of registered projects and representing 55% of credits issued in 2022. Notably, 52% of the carbon credits retired last year originated from renewable energy projects, compared to 44% in 2021. Renewable energy credits (RECs) remain abundant and are among the least expensive types of credits available.



XIX. Questions to be Answered

- How effective are existing international legal frameworks supporting environmental governance?
- Are there identified gaps in the current legal framework hindering effective environmental governance?
- How can financial structures shift towards sustainability?
- What role can international financial institutions play in promoting green finance?
- How can legal measures encourage private sector involvement in eco-friendly projects?
- How can economic structures prioritize environmental sustainability?
- What policies can promote a circular economy and reduce environmental degradation?
- How can governments encourage businesses to adopt eco-friendly practices?
- How can international cooperation be enhanced to establish an effective legal framework for environmental governance?
- Are there successful models of collaboration between nations that can be replicated or improved upon?
- How can legal frameworks encourage public involvement in environmental governance?

- Is there a way to include citizen feedback in decisions on financial and economic structures?

It is highly advised for the delegates to center their attention on the subjects and associated discussions using "WH-Questions" in order to engage in effective debates and yield a more successful resolution.

XX. Further Reading

1. You can explore comprehensive information on international environmental law, crucial for understanding existing regulations set by the United Nations, other international bodies, and states. Access this helpful resource at: http://guides.ll.georgetown.edu/c.php?g=273374&p=1824796.
2. For valuable insights into hazardous waste disposal issues, you can refer to this journal article in Volume 172, Issue 1, dated 15 December 2009, available at: https://www.journals.elsevier.com/journal-of-hazardous-materials.
3. You can access resources from UNEP's Chemicals and Waste Division at: http://web.unep.org/chemicalsandwaste/.
4. You can explore 'Indicators of Sustainable Development: Guidelines and Methodologies' at: http://www.un.org/esa/sustdev/natlinfo/indicators/guidelines.pdf.
5. You can refer to this hazardous waste disposal guide, which covers essential points on the topic: http://www.offices.research.northwestern.edu/ors/forms/purpleguide.pdf.
6. For useful graphs and articles on environmental issues and collaboration with UNEP, particularly related to our topic, you can visit: http://www.grida.no/graphicslib.
7. You should consider UN Sustainability recommendations specific to your country or region.
8. You can examine your country's Environmental (Protection) Agency, reviewing past actions, hazardous waste incidents, potential risks, and best practices.
9. Lastly, you can explore UNDP's Chemicals and Waste Management page from 2017 at: http://www.undp.org/content/undp/en/home/ourwork/sustainabledevelopment/natural-capital-and-the-environment/chemicals-and-wastemanagement.html.

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