Hello Delegates! Welcome to the 2019 UCONN Model United Nations Conference.

My name is Sharan Ghai and I'm a senior in the College of Liberal Arts and Sciences, majoring in biological sciences and minoring in English. My specializations are developmental ecology and applied genomics. I'll be your director for the United Nations Environment Programme (UNEP) this year and I'm extremely happy to have you in my committee for UCMUN's 21st conference. I'm looking forward to listening to what all of you have to say regarding some of the pressing issues we will be discussing during our committee sessions.

In our committee this year, we will be discussing the dangers of marine litter and pollution, as well as the perils of electronic waste. I chose these topics because the need to address these polarized topics grows every day with the constant decline of our surrounding environment. With deliberate, intelligent, and thoughtful conversation, we need to work toward improving our community and building a sustainable future. I'm hoping through discussion we are able to find feasible solutions to these environmental catastrophes around us. I expect all delegates to come prepared with their respective country's views and stances on the topics and hope to be part of a lively and stimulating dialogue.

Before we meet, here's a little more about me: I'm from New Delhi, India and Model UN has been a big part of my life since middle school. In my spare time, I like to read, swim, play any and every racket sport, and- when I can- sleep! Also, I do consider myself an amateur sushi connoisseur, so that fact probably helps further my interest in marine life as well (which we will all discuss together soon).

I'm excited to meet all of you this coming fall and looking forward to seeing what you bring to the table. I would recommend going over the background guides which were written especially to aid your research process. Please don't hesitate to contact me with any questions or concerns you might have.

Good luck!

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Committee History

The *United Nations Environment Programme (UNEP)* is responsible for the United Nations' environmental aid and contribution. The UNEP assists developing countries in implementing environmentally sound policies and practices. Founded by Maurice Strong as a result of the *United Nations Conference of the Human Environment* in June 1972 in Stockholm, Sweden, the UNEP was gradually given overall responsibility for environmental concerns and issues among the United Nations agencies (unenvironment.org). The committee began with a staff of merely 300, including 100 professionals in a variety of fields, and a five-year fund of more than US$100 million (unenvironment.org). At its conception, US$40 million were pledged by the United States and the remaining portion was contributed by 50 other countries (unu.edu).

Today, the UNEP's activities cover a wide array of issues including atmosphere, marine and terrestrial ecosystems and organisms, environmental governance and green economy. It has played a significant role in developing international environmental conventions, promoting environmental science and information and illustrating the way those can be implemented in conjunction with policy, working on the development and implementation of policy with national governments, regional institutions in conjunction with environmental non-governmental organizations. The mission of the UNEP, "to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and people to improve their quality of life without compromising that of future generations," (United Nations) is maintained by continuing the successful operation of all the aforementioned duties. In the future, the UNEP plans on

continuing their work to combat global calamities and catastrophes related to environmental issues that are rapidly increasing today as a result of rising of global warming.

Topic A: Working with Regional Seas

Introduction

As early as 1870, Jules Verne provided a graphic description of how floating litter and debris accumulates in water bodies in his famous novel *Twenty Thousand Leagues under the Sea.* The risk that water bodies and marine life face today is a globally recognized catastrophe. The United Nations Environment Programme's (UNEP) 'Regional Seas Programme' is an international collaborative approach to protect marine environments, its resources, and associated reserves.It is widely acknowledged that greenhouse gas emission-fuelled climate change is having a profound and detrimental effect on water bodies in the world. Over the past few years, regional seas have become prone to degradation, deterioration, and decline due to increasing pollution levels and marine abuse by human populations. Marine abuse is encompassed by two major factors, the actual displacement of water from where it is sustaining a healthy ecosystems and hydrologic cycles as well as the removal of the vegetation needed for healthy hydrologic cycles. Urbanization, deforestation and wetland invasion in the form of pollution account for majority of human caused marine abuse. Furthermore, the deleterious effects of plastic debris on marine environments are constantly reviewed and it has been concluded through multiple studies and research projects that plastic debris jeopardizes the survival of numerous marine species. A large number of marine species have already been harmed or killed by the copious amounts of marine litter found in water bodies today, and the rate of species becoming endangered is growing at an alarming rate because of countless other related anthropogenic activities.

Figure 1: *An ocean garbage patch discovered in the South Pacific*
(Source: www.seagrant.gso.uri.edu)

Marine pollution is caused by the entry of toxic residential, industrial, and agricultural waste and chemicals into the ocean. Marine litter can broadly be defined as human-created waste that has deliberately or accidentally been released into water bodies. Deliberate acts of creating marine litter include ocean dumping, while accidental marine litter is created by events such as oil spills or an excess of driftwood within water bodies. Floating debris tends to accumulate at the centre of gyres and on coastlines, frequently washing ashore. Marine debris is observed everywhere in the oceans, litter enters the seas from both land-based sources and can travel long distances before being stranded. Plastic

usually consists of cellulose, carbon, petroleum, or natural gas. It's made of longs chains of many repeating molecular units. plastic is a foreign body that does not biodegrade. Pieces of plastic smaller than 5 mm in size are termed microplastics. Sources of microplastics range from cosmetic products to textiles, such as fleece jackets. The fishing industry in itself accounts for about 10% of marine debris. Nets and fishing gear get lost or are thrown into water bodies. These "ghost nets" continue trapping marine life for many decades.

In recent decades, the pollution of the oceans by anthropogenic litter, litter that has chiefly originated from human activity, has been recognized as a serious global environmental concern. Marine species are vastly affected through entanglement and ingestion of marine litter. Less commonly known threats of marine litter include the absorption of polychlorinated biphenyls from ingested plastics, which humans inadvertently consume upon consumption of fish and other marine organisms. The problem of marine litter and plastic debris in the oceans is a growing issue and one of the utmost importance, albeit a difficult situation to address. Almost 51 trillion microplastic particles litter marine bodies today, which affect different 800 species (sustainabledevelopment.un.org). 40% of these species consist of marine life, 44% seabird species affected by marine litter, and the remaining 16% consist of humans and land based mammals that consume fish and other marine life. Bodies of water sustain nearly half of the global primary production (Field et al. 1998), a huge portion of which fuels global fisheries (Pauly and Christensen 1995). While human welfare is intricately linked with the sea and its natural resources, humans have substantially altered the face of the ocean within a few decades.

Members of the UNEP include a mix of governmental and non-governmental organisation within countries as well as internationally-based organisations. Founding members include: Australia, France, Japan, the Philippines, Sweden, the United Kingdom, and the United States of America. Today, the UNEP includes more than 140 member states, with the number steadily growing. (International Coral Reef Initiative).

Since its inception 40 years ago, the Regional Seas Programme has constituted a unique approach to the protection of the coastal and marine environment. UNEP administers programmes globally and specializes it's efforts in regions such as West Africa, the Caribbean, the Mediterranean, Northwest Pacific, East Asian Seas, Caspian Sea, as well as East Africa. The programme is one of the most globally comprehensive initiatives because it includes the protection of marine and coastal environments in:

- *The Antarctic*
- *Arctic*
- *Baltic*
- *Black Sea*
- *North-East Atlantic*
- *North-East Pacific*
- *Pacific*
- *Red Sea and Gulf of Aden*
- *ROPME Sea Area*
- *South Asian Seas*
- *South-East Pacific*

Figure 2: *Washed up and accumulated marine litter in the Arctic*
(Source: www.wur.nl)

Most of the Regional Seas Programmes function through action plans, which are adopted by member governments as a method to establish strategy and framework that is comprehensible for protecting and building sustainable environments. Simultaneously, the action plans contribute toward highlighting the concerned region's environmental challenges as well as the associated socio-economic and political situation. Additionally, a lot of the programmes include protocols and also legal agreements that supplement the security of protected areas or laws addressing marine pollution.

Consequently, marine environmental protection and management have become integral political and societal issues globally. However, effective environmental management demands appropriate understanding of the ecological implications of human activities and should hence, be accompanied by sound multifaceted research, scientific backing, and public support.

History and Description of Issue

Plastics are an assorted group of synthetic polymers that originated in the late 19th century, but came to light in the mid-twentieth century. Their low density and durability along with extremely low costs to manufacture make plastics ideal materials for wide range production and packaging applications (Ryan 2015). Their adaptability and versatility has increased the amount of plastic produced annually to an estimated 300 million tonnes in 2012. This total continues to grow at about 4% every year. However, the very properties that make plastics so useful subsequently make waste plastic a massive environmental risk and cause for marine catastrophe. Their durability gives them persistence in the environment and they are easily dispersed by water and wind due to their low densities. Plastics constitute most marine litter and almost 100% of floating litter (iucn.org). Consequently, plastic litter and marine debris are now ubiquitous pollutants in some of the most remote marine regions of the world. Each year, an estimated 8 million metric tons, or 17 billion pounds, of plastic flows into the ocean (oceanconservancy.org).

The massive amounts of plastic flowing into the ocean have lead to the creation of a giant formation in the oceans located between Hawaii and California. Considered to be the largest accumulation of ocean plastic in the world, the Great Pacific Garbage Patch is the largest offshore plastic ammassing in the world, with an estimated 1.15 to 2.41 million tonnes of plastic being added to the formation every year (theoceancleanup.com). Today, at close to 80,000 tonnes, there is more than 16 times the amount of plastic in the Great Pacific Garbage Patch (GPGP) than originally estimated.

Figure 3: *The Great Pacific Garbage Patch*
(Source: www.mkquill.com)

Eighty percent of marine litter is a product of land based sources, with litter and debris coming from activities on land, that include plastics that are used once and end up discarded in the ocean such as straws, plastic bags, bottles, etc. Marine based pollution, essentially litter that reaches water bodies through activities performed in the ocean, accounts for the remaining 20% of marine litter. The latter comes from marine vessels, cruise ships, and ocean-based industries such as oil rigs. Approximately 75% of land based ocean plastic is from uncollected waste that is discarded in water bodies. Additionally, an estimated amount of one ton of plastic to every three tons of fish collected is predicted by

the year 2025 (change.org), all due to the deposition of marine plastic waste into the oceans.

Figure 4: *A garbage island discovered off the Gulf of Thailand*
(Source: www.bangkokpost.com)

Plastic can transport plant and animal species across great distances to other regions. These passengers perturb the balance of the sensitive ecosystems of their destinations. Plastics contain additives that lend the product desirable qualities— but inadvertently damage humans and animals. Bisphenol A, phthalates, and brominated flame retardants can adversely affect sexual development, damage genetic material, or even contain carcinogenic compounds. Pesticides and similar toxins that are regularly released into oceans are also absorbed by plastics. All these toxic substances enter the fatty tissue of

marine organisms and penetrate the food chain. Animals at the ends of food chains, sea birds, whales, sharks and even humans, become at risk due to biomagnification, the process by which the concentration of a substance increases in the tissues of tolerant organisms at successively higher levels in a food chain. Due to the abundance of plastics in oceans today, numerous marine species have a limited oxygen supply or are cut off completely. Plastics can also cover coral species, one of the most negatively affected victims of marine litter, thereby preventing them from populating further.

Coral reefs house some of the most bio-diverse ecosystems on the planet and support nearly a quarter of the global marine species and are amongst the species that are the most detrimentally affected by marine litter and debris. Since the Industrial Revolution began in the 1760's, humans began burning coal in large quantities, which invariably lead to the world's oceans becoming more acidic gradually. Numerous studies have been conducted by organizations such as Ocean Conservancy, the Surfrider Foundation, Green Peace, etc since 2012 to examine the effects that acidification has on ocean environments. The rise in studies was accredited at the time to a sudden increase in ocean acidification which was discovered to be caused by the spikes in global warming, heat waves and marine pollution. The ongoing decrease in the pH of the Earth's oceans caused by the uptake of carbon dioxide (CO_2) from the atmosphere is termed acidification, wherein the pH of seawater reduces significantly in response to oceanic concentration of the gas (Levas *et al*. 2018). Carbon, which contributes majorly towards the constitution of plastics, contribute majorly towards ocean acidification and coral mortality as well.

Another phenomenon that contributes majorly towards marine litter and deteriorating marine environment are oil spills. Earth has large reserves of oil and gas trapped in its surface. when this issue is caused by human interference, it wreaks extreme havoc in marine ecosystems. In the last three decades, the issue of oil spills and their adverse effects have been taken into high consideration and are being treated with high importance. An oil spill occurs when liquid petroleum is released into the environment by vehicle, vessel or pipeline. The problem occurs on a large scale due to human negligence and is a huge form of water pollution. Marine habitats are complex relationships between organisms and their environment. Damage caused by events such as oil spills compromise entire food chains. It is estimated that approximately 706 million gallons of waste oil enter the ocean every year, with over half coming from land drainage and waste disposal (waterencyclopedia.com). Oil spills present the potential for enormous harm to deep ocean and coastal fisheries. The immediate effects of toxic and smothering oil waste may be mass mortality and contamination of fish and other food species, but long-term ecological effects may be worse. Oil waste poisons the sensitive marine and coastal organic substrate, interrupting the food chain on which fish and sea creatures depend, and on which their reproductive success is based.

The oceans were once considered vast and deep, and until fairly recently, it was assumed that no amount of trash and chemicals could them and any damage would be negligible. Unfortunately, today one need not look further than the New York sized dead-zone that forms in the Gulf of Mexico, or the thousand-mile-wide belt og plastic trash in the north Pacific Ocean to realize than the once flourishing ocean ecosystem is on the

brink of collapse. Moving forward, it is imperative to make united efforts to save the oceans, encourage recycling, and minimizing plastic pollution.

Current Status

The UNEPs Regional Seas Programme turns 45 this year. Today, more than 143 countries participate in 13 Regional Seas Programmes (unenvironment.org). The programme has emerged as an inspiring example of how to implement a regional approach to protecting the coastal and marine environments as well as managing the use of natural resources.

Figure 5: *The UNEP declared war on ocean plastic pollution, and it's Regional Seas Campaign is urging countries, corporations, as well as consumers to make sustainable and wiser choices.* (Source: www.blueocean.net)

At present, The Geneva-based Regional Seas programme is described as the jewel in UNEP's crown. With about 120 countries, 14 UN agencies and 12 other international organizations partaking in the programme. However, the programme consigned for short term financial gains. At a time where a huge sum of money is required to keep the Regional Seas afloat, governments continue to reduce budgets and the future of the programme continues to remain uncertain.

Urban growth, industrialization, chemical-based agriculture,transportation, and overfishing of the seas have produced unparalleled stress for oceanic environments which contain ecosystems with the world's richest sources of food and life (UNEP Regional Seas Report). The price that humans today are paying for this unconstrained development takes the form of polluted shorelines, major collapses of fishing stocks, lethal oil spills, polluted waters, and the permanent destruction of marine habitats.

Launched in 1974, the Regional Seas Programme has been described as a race against time (nationalgeographic.com). While being set up, the UNEP's founding governments gave it a "catalytic and coordinating role" in environmental protection (unenvironment.org). The years since Stockholm have only increased the importance of the programme as an alarm bell for dangers to the marine environment. A UNEP-commissioned review of the Regional Seas Program summed up the situation: "Although there is still an interest in levels of contamination in the open ocean and in major oceanic processes, the danger of the open ocean becoming severely polluted is now considered to be less acute, and it is evident that existing problems, and the first effects of new ones, are most likely to arise in waters close to land" (Portman, 1982). The report

added: "Attention is therefore being concentrated on protecting the health of the coastal waters, especially in enclosed and semi-enclosed seas" (Portman, 1982).

Figure 6: *A sea turtle caught in plastic when it was young has had its shell deformed over time with increasing risk to its internal organs. Photo Credit: Wikimedia Commons*
(Source: www.cleanmalaysia.com)

The Regional Seas Program, which is a program designed to address and combat the accelerating degradation of the world's oceans and coastal region, is unique in that it has evolved a framework that can be transferred successfully between regions today, while it's environmental activities are also tailored to the needs and priorities of greatly differing regions. The program adopts an approach in which it engages countries neighbouring seas in comprehensive and specific actions to protect their common marine environment. The

other cornerstone of its success has also been the determination to involve governments in Regional Action Plans, which determines the ability of mandated and sound decision-making for environmental assessment and management. National institutions nominated by their respective governments carry out the actual work of the programme with the authority of the country's government.

Bloc Positions

Increasing marine litter and deteriorating ecosystems and water conditions are global issues that detrimentally affect all countries plagued by them. While no region or country in the world purposely make attempts toward contributing to the marine litter epidemic, most also subsequently do not take appropriate measures to reduce its effects or volume. The blocs that form within this committee tend to form based of off the impact and degree of pollution and endangerment.

Countries actively contributing towards an increase in marine litter:

China and Indonesia are the top sources of plastic bottles, bags and other litter clogging up global seas. Together, the two nations account for about one-third of the plastic debris in global waters. Today, about 9 million metric tonnes of mismanaged plastic waste comes from China with an estimated 4 million metric tonnes of it ending up in the ocean (wsj.com). About 4 million metric tonnes of plastic detritus came from Indonesia, and an estimated 1.5 million metric tonnes became marine litter. Countries like China, Indonesia, The Philippines, Thailand, and Vietnam are dumping moe plastic into oceans than the rest

of the world combined (oceanconservancy.org). The United States contributes about 33.6 million tonnes of marine litter to ocean economies annually (wsj.com).

Such large volumes of plastic waste pollute the sea environment and pose as hazards to human health. Furthermore, the economic cost to clear such litter and the costs to manage the situation are tremendous. India, currently in 12th placed, is expected to jump rank in the following years if conscious efforts are not made by the Indian Government immediately (worldatlas.com).

Figure 7: *Countries contributing most significantly to marine litter*
(Source: www.plasticethics.com)

Countries worst impacted by accumulated marine litter:

In developing countries, waste management, agriculture, and a lack of dedicated water sources and adequate water infrastructure contribute to water pollution and marine

litter. Countries like South Africa, Algeria, Zimbabwe, Haiti, Colombia, Mexico, and Tunisia have the highest amounts of polluted and littered marine ecologies in the world. Additionally, countries like Ukraine, Brazal, China, Fiji, Mexico, Russia, Puerto Rico, Taiwan, Egypt, Morocco, United Arab Emirates, Cuba, Kenya, and Costa Rica have the most unsafe and contaminated tap water in the world (oceanconservancy.org). Reasons for unsafe tap water include sewage discharge in the water, industrial waste, agricultural waste, arsenic or lead from water pipes, and a lack of water treatment infrastructure. In developing countries, 70 percent of industrial waste is released untreated into the sea, polluting the usable water supply. Even laws and regulations regarding industrial waste and hazardous toxins tend not to be too strongly implemented in developing countries due to a lack of alternatives, which are available in more developed nations.

Committee Mission

The UNEP Regional Seas Programme implements a lot of UN marine-related policies. The programme directly addresses the accelerating degradation of the world's oceans and does so by trying to engage countries in comprehensive and specific actions to protect their common marine environments.

As unemployment, resource scarcity, climate change, food insecurity, and inequity have become increasingly higher, the need for radical change has been called for in our societies. To implement this change, the UNEP attempts to meet the challenges of delivering sustainable development to global citizens, while trying to limit themselves to the ecological limits of our planet. The UNEP further tries to assist countries in

implementing socio-economic and environmental dimensions to meet demands for a sustainable future (unenvironment.org)

The UNEP must engage with science-policy interface in order to reach evidence-based conclusions that aid their decision making. In doing so, the UNEP would continue to identify science that integrates socio-economic and environmental policies. Furthermore, convening stakeholding countries to agree upon global norms and standards would be key in involving citizen participation, transparency, and accountability. The committee should finally aim at restoring damaged oceanic regions and engaging countries to support international environmental and developmental targets.

Questions to Consider

1. How is your country impacted by increasing marine litter and have there been any negative socio-economic impacts related to this problem?
2. What changes can your country implement in order to reduce or eliminate the growing problem of marine pollution?
3. How significantly does your country contribute to the increasing levels of marine pollution and what percentage of the global litter comes from your country?
4. What methods can be used to combat the above problem and reduce the amount of litter produced and subsequently disposed of in the oceans?
5. Is there a sustainable option that your country can turn to in terms of the marine litter dumped into the oceans? Eg: Paper Straws instead of plastic straws.

6. Why has there been no improvement in the levels of marine pollution and is your country contributing actively to this increase?
7. What are some ways to save already polluted regions in the oceans and save marine life? Discuss funds or means that can be allotted towards combating this problems.
8. Discuss the disposing of aspects of everyday life that can be controlled or amended to aid the process of marine recovery. Eg: Sewage waste, toxic waste, fertilizers, oil, etc.
9. How can your country contribute toward its national marine ecosystem recovery as well as resilience?
10. How can your country maintain a stable method of marine waste disposal and maintain marine ecosystems simultaneously while maintaining a suitable economic policy regarding the aforementioned matters?

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"Wageningen University & Research." *WUR*, www.wur.nl/.

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The Wall Street Journal is a U.S. business-focused, English-language international daily newspaper based in New York City. The Journal, along with its Asian and European editions, is published six days a week by Dow Jones & Company, a division of News Corp.

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A database containing articles and literature pertaining to environment, conservancy, marine biology, ecology, etc.

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Topic B: Management of Hazardous Electrical Waste

Introduction

Electronic Waste (e-waste) is one of the fastest growing segments of the global waste stream. E-waste encompasses all broken, unusable, outdated, or obsolete electronic devices, components, and materials. Additionally, e-waste also includes items that can be 'e-cycled', i.e. electronics that have the potential to be reused, resold, salvaged, or recycled. The growth rate of technology continues to accelerate quotidian. Technology seems to become obsolete shortly after being purchased. The quick turnover usually happens in an individual's periphery, because with technology and electronics, out of sight is out of mind.

Figure 1: *An 'e-waste mountain' in India*
(Source: www.indiawaterportal.org)

Today, the world produces 50 million tonnes of electronic and electrical waste annually. According to a recent UN report, only about 20% is formally recycled (unenvironment.org). Most of the rest ends up in a landfill, or is recycled informally in developing nations. Global e-waste is on track to reach 120 million tonnes per year by 2050 if current trends continue, according to a report from the Platform for Accelerating the Circular Economy (PACE) and the UN E-Waste Coalition released at Davos, Switzerland in January, 2019 (weforum.org). The report further reveals the annual value of e-waste as over $62.5 billion, more than the GDP of most countries (unenvironment.org). Around 44 million tonnes of e-waste was produced globally in 2017- over 6 kilograms for every person on the planet. This value is equivalent to the weight of every commercial aircraft ever built (unenvironment.org).

In addition to health and pollution impacts, unsuitable management of e-waste results in a notable loss of scarce and valuable raw materials, the likes of gold, platinum, cobalt, and rare earth minerals. As much as 7% of the world's gold may currently be contained in e-waste, with 100 times more gold in a tonne of e-waste than in a tonne of gold ore (weforum.org).

When electronics end up in landfills, toxins like lead, mercury, and cadmium leach into soil and water. One of the most plausible solutions to the ever-increasing problem of e-waste is worldwide refurbishment and *e-cycling*. Developing more robust global laws concerning mandatory treating and safe disposal of e-waste are appropriate solutions as well.

Description of the Issue

People have always been inclined to do their part in recycling, even more in recycling electronics. While recycling electronics is most certainly a step in the right direction, making it a panacea for the current global e-waste problem, is a problem. Unfortunately, that's how the global mindset toward recycling is framed today— and companies are eager to jump onto the "green" bandwagon. A suitable example of this would be *Apple.* In 2016, there was a lot of fanfare surrounding the unveiling of Liam, a robot that was capable of dismantling an iPhone in just 11 seconds (apple.com). At the time, this seemed like an ultra-efficient way to recycle almost 1.2 million units annuals. The solution sounded impressive until the 231 million iPhone sales from the previous year were taken into account. In 2018, Apple upgraded to Daisy, a slight more effective version of Liam (apple.com). The robots were proudly presented as symbols of Apple's dedication towards making their company more environmentally friendly, but ultimately served as perfect examples of recycling in the field of high-tech, as it is today: a drop of green water in an ocean of pollution- noble, but mostly ineffective. Global currently losing ground in the battle to reduce the environmental impact of our electronic equipment.

Figure 2: *A young girl stands near stacks of used electronics at the electronic waste shelter* (Source: www.makeresourcescount.eu)

According to a recent UN report, the United States produces about 6.3 million tons or around 14% of the global e-waste (un.org). Worldwide, more than 45 million tons of electronics were discarded in 2016. From the staggering amounts of e-waste produced, only 20% has been recycled. The remaining amount finds its way to more environmentally harmful end at the landfill (forbes.com). Another growing problem is that of solar panel waste. A seemingly sustainable option, solar panel waste will unfortunately become a major issue in the coming decades as old solar panels reach the ends of their useful lifespans and require disposal. For example, last November, Japan's Environment Ministry issued a warning regarding the solar panel waste Japan produces every year which is estimated to increase to 800,000 tonnes by 2040 (instituteforenergyresearch.org).

Furthermore, China has the highest number of solar power plants on the globe, operating roughly twice as many as the United States, and sadly, has no plan of disposal for the old panels. Solar panels are also manufactured using highly hazardous materials including sulfuric acid and phosphine gas, which makes it extremely challenging to recycle or store in landfills without protection against contamination. They can also contain toxic metals like lead, chromium, and cadmium, which are carcinogenic.

Figure 3: *Environmental threat from clean energy. Improper disposal of solar panels.*
(Source: www.thegwpf.com)

The ever increasing amount of e-waste is the outcome of several trends. The global information society is growing at a great speed. It is characterized by an increasing number of users and rapid technological advances that are driving innovation, efficiency, and social

and economic development. Since 2017, more than half the global population uses the internet and most people have access to mobile networks and services (unu.edu). A major sect of these people own more than one piece of information and communication technology (ICT) device. Replacement phases for mobile phones and computers are also becoming increasingly shorter. Simultaneously, disposable incomes in many developing nations are increasing and a growing middle-class is able to spend more on electrical and electronic equipment, consequently generating more e-waste (rubiconglobal.com).

Essentially, the heart of the issue today lies in mass consumerism, planned obsolescence outpace recycling efforts, and overconsumption. The volume of e-waste continues to grow at a rate of 4% each year (weforum.org). Beyond the inherent limitations of collection and recovery process, what must be remembered is that recycling is first and foremost a removal from circulation, and thus, an implicit incentive to produce and buy afresh. Recycling is used as a balm for the conscience of a pollutant model. Despite its usefulness, there is an urgency to become cognizant of limits of electronics recycling and recognize the root of our growing e-waste problem in order to develop more effective approaches. Essentially, the quintessential issues is a technology sector whose profits are driven by planned obsolescence. The industry must find a method to drive itself forward without needlessly mass-producing electronics at the rate it currently does.

Figure 4: *Computer and TV monitor casings being used as "stepping stones" in a lagoon.*
(Source: www.makeresourcescount.eu)

Current Status

The ever-increasing and swiftly expanding quantity of waste electrical and electronic equipment has become a looming threat to the wellbeing of the environment of several countries and the world as a whole. The inevitability of the requirement of e-waste management and the construction of a holistic system to deal with has become a crucial socio-economic and environmental issue for global sustainable development. However, with rapidly changing technology and increasing customer demands, the rise in e-waste looks set to continue. Reducing the amount of electronics making their way into the waste stream and improving end-of-life handling are vital for building a more circular economy. When waste is decreased, resources are preserved and are returned into the supply chain for new products. In fact, the creation of circular economies are amongst the primary

solutions to the escalating crisis of e-waste. A circular economy is an alternative to a traditional linear economy, which utilizes resources for the longest possible duration in order to extract the maximum value from them whilst they are in use. Subsequently, the resources are recovered and regenerated in the form of products and materials at the end of each service life (wrap.org.uk).

The situation of e-cycling today seems dire. E-waste typically includes discarded computer monitors, motherboards, mobile phones and chargers, compact discs, headphones, television sets, air conditioners, and refrigerators. To be precise, e-waste primarily consists of end-of-life electronics that are discarded by the consumer. Oftentimes, e-waste is radioactive in nature and thus requires specialized treatment and disposing off.

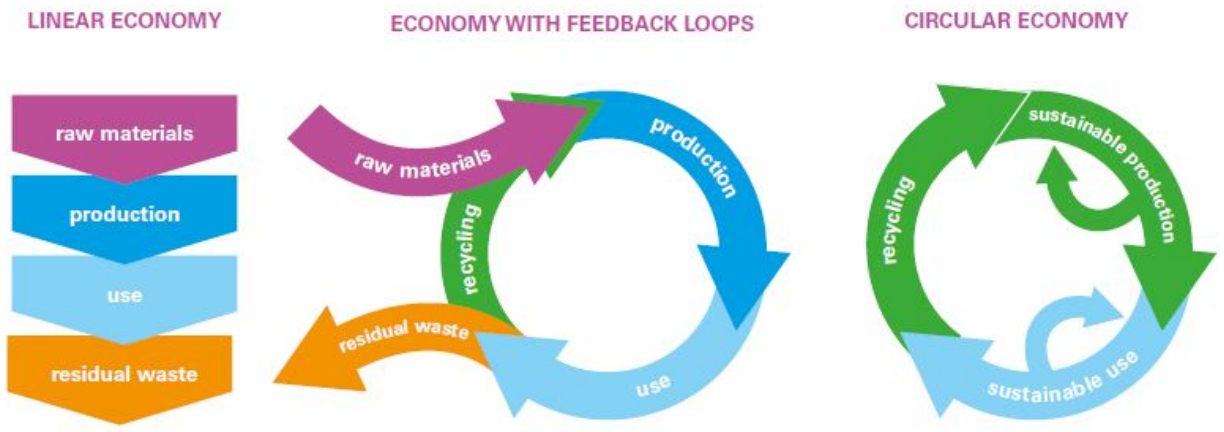

Figure 5: *Linear vs. Circular Economy*
(Source: www.researchgate.net)

The ever-increasing amount of e-waste is partially accredited to increased consumption but also obsolescence. According to a 2017 United Nations study, the volume of e-waste is growing at an estimated 21 percent annually. The study further predicts that

by the year 2020, e-waste from countries such as India and China will be about 18 times higher (unenvironment.org).

According to a recent United Nations University study, a record amount of electronic waste discarded globally in 2017 (unu.edu). About 50 million tonnes of refrigerators, televisions, washing machines, computers, light bulbs, mobile phones, vacuum cleaners and similar electrical appliances were discarded last year. Waste which could potentially have been recovered for recycling contained an estimated 16,500 kilotons of iron, 19,00 kilotons of copper and 300 tons of gold, worth more than USD 52 billion (forbes.com).

Figure 6: *E-waste being manually collected and disposed of in the United States, contributing to the estimated 50 million tonnes of e-waste that was generated in 2018.*
(Source: www.theatlantic.com)

Today, only 20 percent of global e-waste is recycled each year, which indicates the remaining almost 40 million tonnes are either relocated to landfills, burned, or traded illegally. This dire situation exists today despite more than 66% of the world's population falling under e-waste laws and legislation. (downtoearth.org). However, researchers identify consumers as the key to better management of e-waste. Initiatives are being launched by global agencies like the UN as well as Green Earth to encourage consumers to correctly dispose of their e-waste, increase reusing and recycling habits, and adopt sustainable and eco-friendly methods to accomodate a circular economy.

Bloc Positions

Countries contributing most actively to generation of e-waste:

The United States and China generated the most e-waste last year – 32 percent of the global total. In total, it's estimated almost 55 million tonnes of e-waste will be generated in 2019. In 2018, China generated the highest amount, with 7.2 million tonnes per annum, with the USA (6.3 million tonnes), Japan (2.1 million tonnes), India (2.0 million tonnes), and Germany (1.9 million tonnes) trailing behind (envirotech-online.com). However, since China and India have the two biggest populations globally by a huge amount, their e-waste generation is less worrisome when compared to some European nations in terms of per-capita Pollution. Nine of the top ten-waste producing countries around the globe by per capita pollution are in Europe, with the outlier being the United States. Surprisingly enough, Nordic nations lead in e-waste generation, with Norway, Denmark, and Sweden occupying four of the top seven positions, indicating that the high

standard of living and disposable income in such countries allows its citizens upgradation of their technology more frequently.

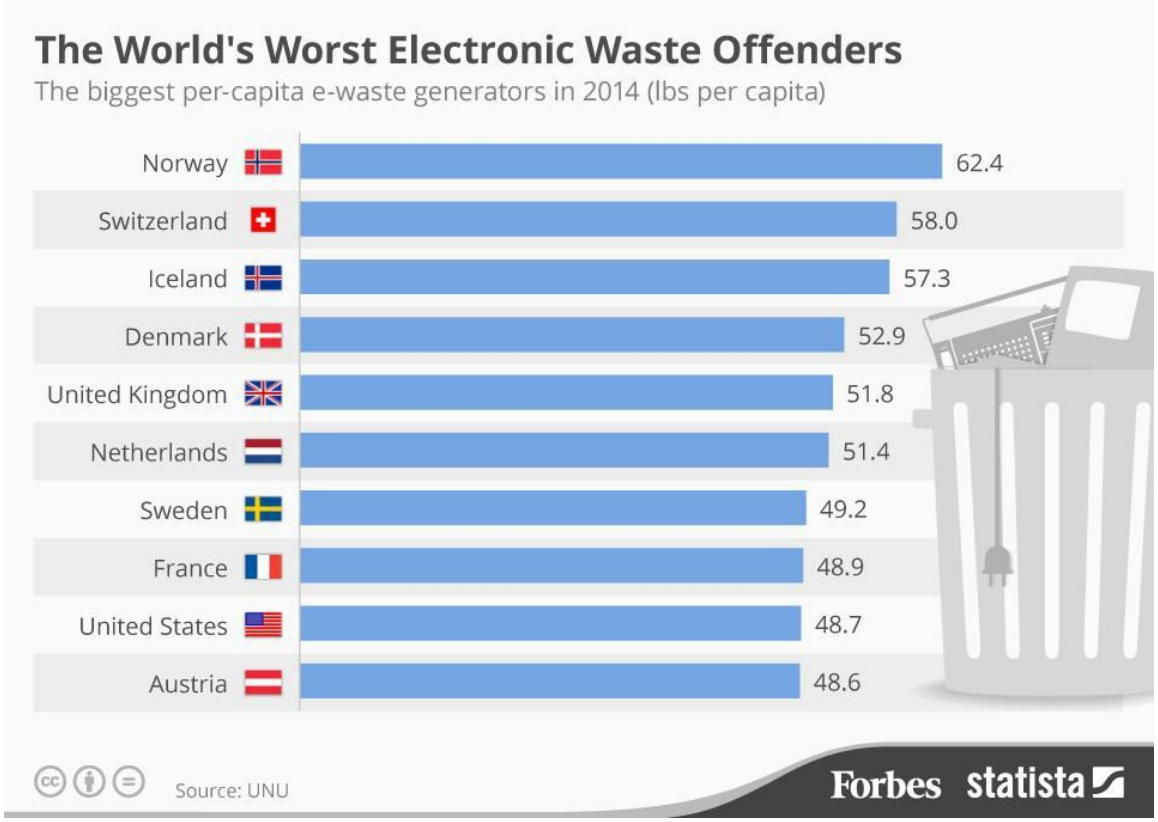

Figure 7: *Countries leading in e-waste generation since 2014*
(Source: www.unu.edu)

However, European Nations are more likely to recycle their old electronic appliances as compared to their global counterparts. It's estimated that approximately 47% of e-waste produced in Europe is recycled, which leaves room for improvement, but is significantly better than the global average of 40%. For example, official statistics indicate that India currently recycles less than one-fourth of their total produced e-waste , with only about 22% of India's e-waste being recycled (envirotech-online.com). Countries that produce such high amount of e-waste should aim to develop more sustainable methods of

disposal as well as attempt to reduce the amount produced to improve the health and wellbeing of its citizens along with the environment surrounding them.

Countries most severely impacted by accumulated and toxic e-waste:

Operating electronic shredders and hiring workers to sift through e-waste can be extremely expensive, which has led to countries looking for easier alternatives. In order to lower operating costs, several recycling centers and countries opt to transport their e-waste to developing countries for further processing. Countries such as China, Nigeria, pakistan, and Ghana receive millions of tonnes of e-waste from their western counterparts annually. Upon arrival, the waste is required to be manually broken down, sorted through, with valuable parts sold to buyers. More often than not, these countries do not have safety regulations instituted to protect workers and the environment. People who work at scrap yards and similar formations wherein e-waste is processed are exposed to hazardous chemicals regularly and frequently are not provided with protective gear. The workers are also oftentimes not trained appositely and thus are unable to prevent toxic chemicals from being released into their surrounding environment. Therefore, most electronic waste sent to developing countries harms the environment in ways that it would not have if it was in a landfill.

Countries with high outputs of e-waste should attempt to work with recycling centers that are awarded e-Stewards certification. The e-Stewards Initiative is an electronic waste recycling standard created and maintained by the Basel Action Network. The program was created out of concern for developing countries, where electronic waste

generated by wealthy countries was being dismantled, often by underage worker (e-stewards.org). The program Recycling centers possessing this certification process their waste in the United States, as opposed to shipping it to a developing country. Working with establishments that have this certification guarantees e-waste is disposed of properly without harming the environment or the people in the neighbouring communities.

Figure 8: *A manual worker sorts through piles of e-waste transported from the Western World*
(Source: www.recyclenation.com)

Committee Mission

With the constant growth and appetite for electrical and electronic products, e-waste has become a fast growing waste stream today. Combined with rapid innovation and ever-shorter product lifespans, e-waste is considered a legitimate threat to the sustainability of human lifestyle today. Illegally and poorly managed e-waste is pollutes not only the environment we reside in, but also harms human health and contributes significantly to man-made climate change and global warming. The worst impacted are generally countries that are not well equipped to manage it.

The UNEP must aim at soundly analyzing how effective management of e-waste can help reduce harmful emissions and prevent hazards to health and the environment while simultaneously coming with efficacious solutions to help affiliated countries reduce and manage e-waste. The committee should attempt to focus on discussing the recycling of raw materials from discarded electronics and further discuss the attached benefits of conservation, reduced air and water pollution, and the non-hazardous disposing of e-waste. Furthermore, the reduction of methane emissions, which are more potent than carbon dioxide at trapping heat in the atmosphere, should certainly be a point of focus and discussion.

The global economy is seeing a rapid increase in the generation of hazardous waste, with the most conventional kinds of waste produced in industrial and manufacturing operations. The committee should aim at promoting sound e-waste management and working with national as well as state governments around the world to help reduce and manage waste effectively. The committee should further work toward enhancing

international cooperation, raise awareness, build awareness, build political will, and develop capacity to promote resource conservation and resource efficiency.

Questions

1. How actively is your country contributing to the increasing problem of e-waste?
2. How can your country accelerate ecosystem recovery?
3. How severely is your country affected about the problem of electronic waste? Is your country taking appropriate measures to combat the problem?
4. Is your country taking measures to avoid e-waste ending up in landfills?
5. What are some economical and sustainable methods and procedures to dispose of electronic scrap that your country can practice?
6. What are some additional steps that your country can take to reduce the global production of e-waste and reduce the overall production of excess electronic equipment?
7. What do the citizens of your country generally do with their e-waste? What are their usual methods of disposing of the same?
8. How will your country combat the current digital dumping zones, help build their resilience, and speeden their recovery?
9. What are some stable and economical methods of disposal and replacement of electronic items that your country can offer its citizens?
10. What is the level of growth of e-waste in your country over the last 10 years? Compare this growth with the overall growth of electronic items in your country.

What are some viable options to reduce growth of electronic items while not stunting economic and technical development?

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