KINGMUN

2018

UNITED NATIONS ENVIROMENT PROGRAMME

Background Guide

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Director's Letter

Dear Delegates,

Welcome to King County Model United Nations 2018 and the United Nations Environment Programme (UNEP). My name is Roshan Nair and I am serving as your director. I am a junior at Tesla STEM High School, and my second year involved in MUN. I am joined by my assistant director Sahana Deo, a Senior at the International Community School, as well as my chair, Ariana Haji, a junior at Juanita High School.

As dais, we have selected two topics for the committee: mercury and preserving biodiversity. Both topics are currently relevant issues, in which you will be able to have an active debate.

Mercury and the danger it poses to public health and the environment is an increasingly growing issue. As the world industrializes using coal, as well as struggles to effectively dispose of household and industrial waste mercury, it is imperative that solutions are found to deal with its effects, while preventing further contamination.

Similarly, preserving biodiversity is an expanding issue that needs addressing in order to ensure sustenance of ecosystems and genetic diversity. A loss of biodiversity would mean a loss of potentially scientifically valuable materials and genetics, as well as a loss of ecosystem services. It is crucial that action is taken to ensure the sustainable preservation of ecosystems and natural resources.

We, as a dais, have written this guide to give you an understanding of the topics, as well as to give you a starting place for further research. It is our hope that you can use this information to form an impactful discussion and create solutions to these pressing environmental issues. Please feel free to email us with any questions. I am excited to see you all in the committee!

Yours sincerely,
Roshan Nair
Director, United Nations Environment Programme

~ TOPIC 1 ~

History

Mercury, or liquid silver, was one of the most ancient elements to have been discovered and used. Ancient Greeks, Romans, Chinese, and Hindus used mercury in everything from medicine to talisman. The largest source of mercury is cinnabar, its only known ore. Cinnabar's richest deposits can be found in Spain and Italy.

Scientifically mercury has been found to be a highly toxic element, once released, mercury persists in the environment, cycling through air, water, land, sediments, animals, and plants, hence resulting in bioaccumulation in ecosystems. However, this was not always known throughout history. Chinese emperors used to believe that mercury would help to prolong their lives, and mercury can be found in many traditional Chinese medicines. During the mid-17th century, the use of solutions of mercury nitrate was widespread in the felt industry to make hats, and mercury poisoning became endemic. Similarly, in 1958 a unique illness around the Minamata Bay, on the Japanese island of Kyushu, discharge from inorganic mercury waste caused illness.

Various inventions were introduced during the Industrial Revolution that increased the demand for mercury. For example, in 1979, mercury fulminate was used as a detonator for explosive and in 1891, Thomas Edison's lamps contain mercury. As developing countries continued to industrialize, mercury began entering the environment as a pollutant in increasing amounts. Large factories began to burn oil, wood, and coal for fuel, thereby causing mercury to become airborne. The historical use of mercury has set the stage for many modern processes that utilized mercury. Estimations show that over the past four-thousand years, historical and continued modern use of mercury has released 350,000 tons of mercury into the environment, hence becoming a serious threat to the Earth's biosphere and human health.

Moreover, since the introduction of mercury into the western world 200 years ago, there has been controversy regarding its use in the health industry. One of the main ingredients in dental amalgams is mercury. In 1845, The American Society of Dental Surgeons asked its members to pledge that they would not use amalgams; however, the society disbanded in 1865. Once the society reconvened three years later, it formed a new position that "amalgam, is a valuable, viable, and safe choice for dental patients." Another example of the use of mercury in the health industry can be found in vaccines. Since the 1930s, many vaccines have contained metabolized mercury. Most vaccines in the United States have reduced the amount of metabolized mercury to trace amounts, except for the influenza vaccine. However, controversy regarding the use of mercury in medicine continues to persist today.

Past UN Action

The UNEP carried out its first Global Mercury Assessment in 2002 based on concerns of mercury as a global pollutant from various governments. In 2007, the Governing Council asked that a new report, with a focus on atmospheric emissions, be created. Information from the report was compiled into a summary report for policy makers entitled *The Global Atmospheric Mercury Assessment: Sources, Emissions, and Transport* and was released along with a scientific report titled *Technical Background Report to the Global Atmospheric Mercury Assessment.* The assessment continues to be updated on a regular basis with the goal of providing policy makers with accurate information to initiate programs that will help to reduce mercury levels in the environment and mitigate the harmful effects of atmospheric mercury.

The Minamata Convention on Mercury is a global treaty with the objective of protecting the environment and human health from the harmful effects of mercury. The treaty was agreed upon by member states on 19 January 2013, and officially adopted later that year at the Diplomatic Conference, where member states came together to review the treaty, on October 10th. The treaty included the ban on new mercury mines as well as the phasing out of old ones, the phasing out of mercury in several products and processes, control the amount of

mercury pollutants released into the air, land, and water, and the regulation of gold-mining. The treaty also addressed the proper storage of mercury and its handling once it becomes waste as well as the health issues surrounding mercury. Per a UNEP report, the *Global Mercury Waste Assessment 2017,* implementation of the points of the treaty were proving to be ineffective. Mercury waste management was assessed in thirty countries, and it was found that mercury was still used in far too many commercial and basic household items. Furthermore, waste management of mercury proved to be a persisting issue, especially in developing countries.

The Conference of the Parties to the Minamata Convention on Mercury (COP1) was held in September 2017 with the purpose of assessing the implementation of the Minamata Conventions. The Convention found that improvements were not being made following the adoption of the Minamata Convention due to three main issues. Primarily, not many people were aware that mercury was used in everyday items. Second, many nations, especially developing ones, did not possesses the resources to deal with the spread of mercury into the air, land, water, and food chain. Third, many opportunities to regulate mercury were being missed. Based on these issues, the Convention outlined a plan of action for achieving the objectives of the Minamata Convention. The plan included reducing coal-fired power production by transitioning to renewable energy, use of smarter chemicals, and close monitoring of contamination by mercury. It is relatively new and has not yet been fully implemented in all sectors.

The goal of the UNEP Global Mercury Partnership is to protect the global environment and human health from the adverse effects of the release of anthropogenic mercury into the air, water, and land. The Partnership works towards this goal with close assistance from stakeholders that assist in the effective implementation of the Minamata Convention of Mercury. Various governments have also initiated a partnership, hence helping to strengthen the role of the Partnership in managing mercury activities. Currently, the Partnership has split their goal into eight target areas: Mercury releases from the cement industry, mercury waste management, mercury reduction in products, mercury control from coal combustion, reducing mercury in gold mining, mercury reduction in chlor-alkali, mercury air transport and fate research, and mercury storage and supply. Along with non-governmental organizations (NGOs), the Partnership has launched several projects in those areas, many of which have been successful in reducing mercury releases.

Current Situation

The burning of fossil fuels, especially coal, is the single largest source of anthropogenic mercury emissions, at 35%. Coal burning power plants that don't utilize scrubbers, which remove pollutants and particulate matter from emissions, release mercury directly into the environment. This inorganic mercury is converted into methylmercury by microbes, mainly in aquatic ecosystems, like lakes and oceans. This organic mercury is then easily bioaccumulated and biomagnified into organisms as it collects in their lipidic tissues. Large amounts of mercury are then found in fatty fish like tuna, salmon, and swordfish, which are later consumed by humans. This increase in atmospheric mercury is attributed to rapid industrialization. Countries that have, or currently are industrializing with large amounts of coal, pose the largest potential increase in mercury contamination of ecosystems.

Mercury is often used in gold mining to extract gold from ore. Amalgam, a mixture made up of mercury and gold, is heated, evaporating the mercury, and leaving the gold. Mercury from artisanal and small-scale gold mining (ASGM) is estimated to be about 1400 tons a year or 17% of anthropogenic mercury emissions. About ten to fifteen million miners and roughly four to five million women and children are involved in this sector, and such exposure to mercury vapors has detrimental consequences for their health. In addition, mercury vapors eventually settle into the soil and sediment near bays, oceans, rivers, lakes. Similarly, to how mercury from coal combustion enters the food chain, mercury from ASGM is then transformed into methylmercury by anaerobic organisms. This methylmercury is then absorbed by phytoplankton and ingested by fish. Many NGOs are exploring ways in which market-based approaches can be taken to enable a transition away from ASGM, which currently helps to produce twelve to fifteen percent of the world's gold supply.

Eliminating mercury in products such as thermometers, switches and relays, sphygmomanometers, and thermostats has been effective. However, it is imperative that commercially cost effective alternatives for mercury in batteries, lamps, and in dental care products are found. Reducing mercury in products may be one of the most effective ways in regulating the amount of mercury. Reduction of mercury in consumer products concerns all stages of the product's life-cycle. Efforts must also be made to eliminate the release of mercury during manufacturing and other industrial processes via environmentally conscious production, transportation, storage, and disposal processes.

Mercury waste management practices vary around the world. Waste with low mercury concentrations is generally allowed in normal landfills. However, some nations only allow waste with higher mercury concentrations to be deposited in designated landfills that are equipped with the technologies to limit mercury leaching and evaporation. Over the years, mercury waste management has become increasingly difficult as it is collected from a larger variety of sources, including slags, the alkali industry, ashes, and gas filtering products. Mercury waste management, in accordance with local and national regulations, often requires long-term investment and oversight making it very difficult for countries to compile the necessary resources to launch effective waste management systems.

Bloc Positions

USA, Canada, and Europe

As these countries are developed, they have advanced methods of dealing with the proper storage and disposal of mercury, and extensive research regarding the health and environmental effects of mercury. At the same time, these countries are also primarily responsible for the high levels of anthropogenic mercury in the atmosphere as they industrialized using coal. The United States Environmental Protection Agency has helped to initiate several pieces of legislation aimed at reducing the amount of mercury released into the environment. The most recent piece of legislation having been the Mercury Export Ban of 2008 which aims to reduce the availability of mercury in domestic and international markets, and hence the use of mercury for commercial purposes. The three main provisions of the Act are that Federal agencies are prohibited from conveying or distributing mercury, the export of metallic mercury is prohibited, and the Department of Energy should designate one facility to manage and store metallic mercury. Canada also has initiated federal actions, regulations, and standards for the proper management of mercury. Over the years, Canada has added several requirements for the proper implementation of pollution prevention plans under the Canadian Environmental Protection Act. Western Europe has also taken initiative to reduce the amount of mercury in the atmosphere. Over the past fifteen years, roughly thirty-four sites in the Netherlands, Germany, United Kingdom, Finland, France, Sweden, Norway, Italy, Portugal, Belgium, Spain, Austria, and Denmark have shut down part of their mercury-cell production processes. In the European Union, about fifty operating mercury cell chlor-alkali plants with a combine production capacity of 5.8 million tons a year are in the process of becoming decommissioned by 2020. Despite efforts by these countries to reduce the release of anthropogenic mercury into the atmosphere, their industries continue to heavily rely on using coal as a fuel. Coal remains one of the easiest forms of energy to continue using, and it would be expensive for countries to transfer industries that utilize coal as a fuel to a source that has a lesser mercury footprint.

Latin America

Mercury continues to persist as a problem in Latin America. In the region, mercury is widely used in artisanal gold mining and hospital equipment. Emissions are produced by refining, transport, extraction, and combustion of thermoelectric plants, hydrocarbons, and steelworks. Moreover, artisanal and small-scale mining use smuggled mercury coming from Peru and Ecuador. Artisanal gold mining is practiced in about a dozen Latin American countries and about five hundred thousand small-scale gold miners contribute towards the illegal demand for mercury. A few Latin American countries have recognized this issue and taken steps to prevent the

issue from escalating any further. Bolivia, Costa Rica, and Honduras have created mining industry laws that ban the use of mercury. Colombia passed a law in 2013 that would phase out mercury in mining and in the industry over the next five to ten years. At the 19th Meeting of the Forum of Ministers of the Environment of Latin America and the Caribbean in 2014, a key point of conversation was the sound management of chemicals and waste, namely mercury. The Forum called for more Latin American and Caribbean countries to not only sign, but also ratify the Minamata Convention on Mercury.

Middle East

The regional supply of mercury is relatively low in Middle Eastern States, amounting to an average of 0-50 metric tons per year. With limited resources and more pressing environmental issues, the region has has spent less time addressing the issue of mercury. However, the global use of mercury poses a hazard to all regions; much of the mercury circulating in our environment today was released years ago, but land, water, and other surfaces repeatedly re-emit mercury into the atmosphere after its initial release into the environment. The re-emission of mercury into the environment continuously circulates the pollutant around the globe, harming various communities. Because of this, it is imperative that Middle Eastern countries work hand in hand with other nations to ensure that the use and release of mercury is properly regulated.

Africa

Despite the dangers that mercury poses, it is still widely used in Africa. While Africa does not manufacture mercury added products, the continent is a leading importer of mercury. Because of this, many African countries have pledged their commitment to addressing mercury as a serious environmental issue. The Zero Mercury Working Group, an international coalition of over ninety-five public interest environmental and health non-governmental organizations from more than fifty countries, with several representatives of said organizations and countries from Africa, had a conference in May 2017 in Nairobi, Kenya to discuss the need for governments to develop and implement the Minamata Convention. The United Nations Environment Global Mercury Partnership was a key stakeholder present at the conference. As a result of the conference, Uganda is in the process of developing a National Action Plan for reducing mercury in artisanal and small-scale gold mining. While this is a positive step for East Africa, there is still a need for legislation that regulates the use of mercury in the continent.

South, Southeast Asia, and China

Globally, Asia contributes to nearly fifty percent of anthropogenic mercury emissions. Majority of these anthropogenic mercury emissions come from coal-fired plants, most of which can be found in Indian ad China. Artisanal and small-scale gold mining is most common in Malaysia and Indonesia, and a recent UNEP report found that countries in East and Southeast Asia consume the most mercury. With some of the highest levels of pollution in the world, many Asian countries depend on the burning of coal as a fuel. However, recognition of the issue had hand as prompted many Asian countries to take steps to find alternative solutions to their heavy coal burning. The Chinese government has vowed to spend three-hundred and sixty billion USD on clean energy projects, making China one of the world's biggest investors in alternative energy sources. Many other Asian countries are following China's example and are beginning to seek clean energy alternatives as they rapidly industrialize.

Case Studies

Minamata Disease

Minamata disease, or more commonly known as mercury poisoning, is a neurological disease which affects muscular and cognitive function. The first understanding of the condition came from Minamata City, Japan, in 1956.The Chisso Corporation, a chemical company that has produced a wide variety of chemical products, had been releasing wastewater, into the Minamata bay. The company was one of the largest economic assets in the region, and the largest source of employment in Minamata. The factory's production of acetaldehyde, a widely used organic compound, began in the year 1932, which rapidly expanded and produced over 50 percent of the Japanese supply. The production of acetaldehyde is done through a chemical reaction with mercury sulfate, producing waste organic methylmercury.

People around the city began becoming ill, with impaired bodily functions and convulsions that would eventually lead to death. Two groups were organized to find the source of the unknown disease. The Kumamoto University Research Group and the Strange Disease Countermeasures Committee were established and found, and through observation of local animal populations, largely domestic cats, it was determined that whatever the illness was, it was likely caused by consumption of fish and shellfish from the waters around Minamata. The conclusion was formed that a heavy metal was the culprit. Through analysis of the Chisso plants wastewater, a variety of heavy metals were found, the most significant being mercury.

Over the course of more than 30 years, the lives of nearly 2000 people were claimed. Due to the continuation of acetaldehyde production with use of mercury sulfate until 1968, the company has been paying compensation to the people of Minamata for damages caused, and has been ordered to clean up the contaminated site.

Further Research

- http://www.who.int/bulletin/volumes/92/4/12-116152/en/
- https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/mercury
- http://mercuryconvention.org/Home/tabid/3360/language/en-US/Default.aspx

Guiding Questions

1. What regulations regarding mercury has your country implemented and to what extent have they been effective?
2. What can be done to reduce waste and emissions containing organic methylmercury?
3. What are potential alternatives to artisanal small-scale gold mining?
4. What role should have developed countries play in assisting developing countries?
5. How can cost effective solutions to mercury waste and emissions be implemented?

~ TOPIC 2 ~

History

Before scientists were able to determine the relative origins and traits of species, life forms as we know it were declared to be simplistic. However, more current studies reflect how complex and evolving these life forms are, and how they contribute to biodiversity within an ecosystem. Although the understanding of modern biodiversity can be credited to the principle theories of Charles Darwin, it wasn't until several decades ago that the idea of biodiversity was further detailed and evaluated. At the National Research Council/National Academy of the United States, in 1985, scientist Walter G. Rosen first introduced the comprehensive idea of biodiversity. Since then, the effects of this conference have given way to a rise of other organizations involved in conservation biology and understanding biodiversity. This includes the Society for Conservation Biology founded in 1985, and later programs involving the World Wildlife Fund with scientists from across the world working to conserve biodiversity.

Since the existence of Earth, five major mass periods of extinction, along with numerous minor events have led to large drops in biodiversity. The Holocene extinction, the sixth and current period of extinction, refers to the on-going extinction of biodiversity due to human activity. Scientists first discovered this crisis in the 1970s yet is thought to have been occurring since 12,000 years ago. This period of mass extinction marks the first time in history that one species, humans, have been responsible for the extinction of species, and thus loss of biodiversity in ecosystems. With such widespread degradation of biodiverse habitats, such as forests and coral reefs, most of extinctions in these habitats remains undocumented. Actual rates of extinction of species is roughly 100 to 1000 higher than recorded rates.

Throughout history, some of the most drastic changes to biodiversity have been because of aggressive industrialization and a lack of awareness of human impacts. While the United Nations and interwoven agencies have helped initiative strategies to preserve biodiversity, enforcement of policy is crucial in order to ensure that historically threatened species receive protection.

Modern techniques in the preservation of biodiversity have evolved from a deeper understanding of the way humans interact with the ecosystems around them. The first major recorded impacts of external effects on the preservation of biodiversity were of early scientific theorizations, with the classification or organisms being limited to restricted taxonomy levels. Due to the lack of complexities in the classification of organisms, the extent of biodiversity was less valued or emphasized. Over the course of added classification and reports of species, concern over biodiversity increased and propelled discussions on the significance of sustainability, and how this corresponds to a healthy treatment of biodiversity.

The IUCN Red List, a subset of the International Union for the Conservation of Nature, set a precedent for the organization and reevaluation of threatened species, and how this would impact biodiversity in the long-term. However, this list evolved over time with increased awareness, and a renovation of how biodiversity should be assessed. When in 2010, the Convention on Biological Diversity implemented a step-by-step approach to protecting biodiversity, the IUCN Red List also experienced gradual refinements that contributed to the assessment of biodiversity. These factors included adding previously unknown species to a report discussing population threats, with assessment categories pertaining to risk of extinction, population size, and geographic relativity of the species.

Past UN Action

The UNEP Global Biodiversity Assessment of 1995 was the first global assessment of the effects of humans on biological diversity. Conducted by the UNEP, as well as the Global Environment Facility, an international financial partnership and mechanism for the environment, it concluded that the earth's biological resources were under threat largely because of human impact, and that human impacts will influence potential

biological benefits in the future. It also states that preserving biodiversity must extend beyond land preservation and must be integrated into all other areas of land management, including agriculture, forestry, fisheries, and socio-economics. The assessment was conducted not based on an individual analysis of ecosystems or the effectiveness of policy, but rather in the understanding of components of biodiversity and where gaps in research exist. The assessment is looked at as a resource, that creates a scientific base for policy making.

An immersion in scientific studies and increased awareness allowed a greater emphasis to be placed on the protection of biodiversity. In 1992, the Convention on Biological Diversity was formally initiated, leading to various avenues including the safeguarding of sites associated with scientific and cultural significance, restoration of various ecosystem forms, as well as making sure powerful industries do not exploit the environment. The change in the way biological systems were approached helped pave the way for more pressing international efforts to come into place.

The tenth Conference of Parties to the Convention on Biological Diversity set out a Strategic Plan for Biodiversity 2011-2020, establishing the United Nations Decade on Biodiversity. The convention had three main objectives when laying out the Strategic Plan: the conservation of biological diversity, the sustainable use of the components of biodiversity, and equitable sharing of benefits derived from the genetic resources of the preservation of biodiversity. Through these objectives, the convention has formed a framework for nations to follow. It calls upon governments to establish National Biodiversity Strategy and Action Plans (NBSAP) and then to include it whenever making policy decisions regarding a field that may affect biodiversity. Even with actions taken under the convention to prevent loss of biological diversity, there are still projected trends of increased pressure on biodiversity and ecosystems, causing a loss of biological resources and variance.

The Cartagena Protocol on biosafety of 2003 was implemented to ensure that biological diversity was adequately protected from the transfer and use of modified organisms. 171 states ratified the protocol. Through the protocol, the Conference of Parties seeks to establish systems of implementation, capacity building, and cooperation and information sharing, while ensuring compliance. Because of the Cartagena protocol, bilateral agreements, especially surrounding capacity building, between nation states have been successfully formed. With its successes, the protocol retains challenges of integration and implementation such as: lack of financial resources, insufficient risk assessment and management, and ensuring compliance to the protocols guidelines. This has posed a greater challenge in developing nations. The successor to the Cartagena Protocol, the Nagoya - Kuala Lumpur Supplementary Protocol will enter into force on March 5th, 2018. The protocol builds upon Cartagena and aims to ensure that damages caused by use of living modified organisms are therefore attributed to those organisms. It also requires that response measures are instituted to restore biological diversity to impacted ecosystems.

Current Situation

Rapid land destruction plays a large role in decrease of biodiversity. In the very diverse ecosystems, like tropical rainforests, estuaries, wetlands, and coral reefs, land degradation causes even larger problems. Around the world tropical forests are rapidly in decline. 17% of the Amazon Rainforest has been lost in the last 50 years, largely due to slash and burn agricultural practices. Many cities have been built, and are being developed, on top of estuaries, and around wetlands, which reduces their ability to perform ecosystem services, deal with pollutants, and retain their variety of organisms. In some ways this massive land loss, and therefore biodiversity loss, has been mitigated. One of such ways is in the international growth of national parks and preserved natural spaces. Many countries have been developing protected parks on land and in their oceanic territories in order to ensure continued benefit of ecosystem services, retain valuable biodiversity, and encourage a tourism industry.

Pressures from land-based and marine activities continue to negatively affect the biodiversity of coral reefs. Destructive fishing and overfishing methods are the most pervasive threats, impacting around 55 percent of reefs. Likewise, roughly 25 percent of the world's coral reefs are affected by pollution from land. This pollution includes nutrients from farming and sewage as well as coastal development. Overfishing and pollution remove

large quantities of biomass, resulting in a lack of biodiversity that eventually causes coral reefs to die off. Coral reefs in Southeast Asia receive the most pressure with nearly 95 percent of coral reefs under threat.

A spike in tourism in recent decades has proven in beneficial in promoting the biodiversity of ecosystems. Not only has tourism played a positive role in promoting awareness about the biodiversity of popular tourist locations, but it also helps to provide economic incentives to protect the habitat. Tourism often provides a source of financing for biodiversity conservation efforts, and an alternative to the overexploitation of wildlife and land. However, it can come at costs. In the past, there have been instances in which a lack of effective planning mechanisms and management control have resulted in mass tourism developments being a threat to biodiversity conservation. Additionally, regardless of the form of tourism development, facilities, and other infrastructure to enhance the experience for tourists requires a significant number of tracts of land and building materials, which can place stress on the biodiversity of an ecosystem. Mainstream tourism can also lead to issues of solid waste disposal and water contamination, hence creating further consequences for biodiversity conservation. These negative aspects of poorly managed tourism development gave rise to ecotourism, a set of principles and practices to harness tourism's economic potential for biodiversity conservation, in the 1980s and 1990s. However, these practices and principles require more refinement and awareness and the extent of their success remains unevaluated. Forecasts predict that it will be increasingly important that sustainable tourism practices are developed in hotspot countries in Southeast Asia in South America to guarantee the preservation of biodiversity.

Biodiversity loss results in the loss of nature's chemicals and genes, many of which have not yet been discovered and have the potential to be utilized for consumer products and medications. Globally, medicinal plant use is one of the most common medication tools in both traditional and contemporary medicine. Communities often rely on natural products offered by the biodiversity of various ecosystems for medicine. Despite the existence of synthetic medicine, a global demand for natural products persists. Biomedical research and the existence of medicinal products relies on plants, animals, and microbes to understand human physiology and how to treat diseases. Almost 90% of human illnesses known to the scientific community can be treated with drugs derived from natural sources. And as we lose 18.7 million acres of tropical forests every year, we lose the ability to derive more of these undiscovered pharmaceuticals.

Agro-ecosystems need biodiversity in order to produce effective yields. Without this crucial variation of organisms, the loss of ecosystem services they provide is inevitable, and in many cases prevalent. Problems with sufficient pollination have caused fruit yields to suffer, due to a lack of pollinator insects. Sustenance of nutrient cycles becomes more difficult without the variety of microorganisms also has a negative impact on crops. Encouraging the practice of sustainability on agricultural land is essential in ensuring the symbiotic relationship between biodiversity and agricultural production does not continue to disappear with poor stewardship.

Most countries are struggling with the issue of complex and invasive species. These species are often introduced irresponsibly, or in an effort to maximize a specific resource. Species that are introduced to habitats similar to their native ecosystem engage in conflicts with surrounding biodiversity. These introduced species can then limit the population growth of native flora and fauna. The most significant consequence of invasive species is that they cause a widespread loss or alteration of habitat. Invasive species also threaten native species by outcompeting them for natural resources. To avoid such issues, custom checks, inspection of shipments, conduction of of risk assessments, and quarantine regulations are in place. Despite this, global inspection and risk analysis is often not sufficient. Control of invasive species requires collaboration amongst governments, economic sectors, and NGOs.

Bloc Positions

USA, Canada, and Europe

These countries have acknowledged the dire need to address preserving biodiversity not only in their own countries, but around the world, and have the resources to take necessary action. The United States has established the United States Agency for International Development which aims to assists developing countries

grow sustainability. One of the functions of the agency is to help protect diversity globally so that communities don't lose essential goods and services and so that species crucial to the functions of an ecosystem aren't lost to extinction. The Agency invest two-hundred million dollars each year towards the cause of preserving biodiversity in over fifty countries, including Kenya, the Andean Amazon, Thailand, El Salvador, Cambodia, and in Central Africa. Canada too emphasizes the importance of a global outlook when approaching the issue of biodiversity. Once they signed the United Nations Convention on Biodiversity in 1992, they established the Canadian Biodiversity Strategy in 1994. As a response to the rapid loss of biodiversity, the European Union has established a 2020 EU Biodiversity Target which includes six targets: to fully implement the Birds and Habitats Directives, to maintain and enhance ecosystems and their services, to increase the contribution of agriculture and forestry to maintaining and enhancing biodiversity, to ensure the sustainable use of fisheries resources, to control invasive alien species, and to help avert global biodiversity loss.

Latin America

Latin America serves as the home to thirty-four percent of the world's plant species and twenty-seven percent of the world's mammals, making it one of the world's biodiversity 'superpowers'. The region also serves as a world leader in protecting biodiversity, with one fifth of the land in Latin America set aside for conservation. Many Latin American countries such as Brazil, Colombia, and Paraguay have pieces of national environmental legislation that aim to preserve the biodiversity of their country. Argentina and Costa Rica maintain national-level compensation funds to offset impacts to biodiversity. A report entitled "Millennium Development Goals: advances in environmentally sustainable development in Latin America and the Caribbean" notes while many countries have made strides to preserve their biodiversity, a major challenge that would help to further the cause would be to halt deforestation. In recent years, nearly seven per cent of the region's entire forest cover has been lost, preventing further lost would prove to serve as a major step in further preserving the rich biodiversity of Latin America.

Middle East

With a large amount of political turmoil within several Middle Eastern countries, conservation of Biodiversity has taken a back seat when action is at its most vital point. Not only that, but as these countries struggle to industrialize and face rapid population growth, preserving the natural ecosystems of wildlife in the region has proven to be difficult. The countries of this region have signed and ratified the United Nations Convention on Biological Diversity, and with the Middle East serving as a transition zone between three major geographical areas: the Palearctic, Afrotropical, and Oriental Realms, many countries hope to prioritize the issue of biodiversity.

Africa

Biodiversity in Africa continues to decline, with ongoing losses of species and habitats. Not only are Africa's freshwater ecosystems and their biodiversity especially threatened, but Africa continues to experience deforestation and land degradation. The adverse effects of climate change on species and ecosystems has only exacerbated pressures on Africa's biodiversity. Despite this, African countries are willing to collaboratively work to address the Aichi Biodiversity Targets. Since the introduction of the Aichi Biodiversity Targets, many African countries have achieved seventeen percent of their terrestrial area targets as well as ten percent of their marine protected area targets. However, as many countries in Africa are continuing to develop, they lag in access to knowledge and in financial resources in comparison to other countries. In the future, it will be imperative that international mechanisms are used to support African countries in the sustainable use of ecosystems, that transboundary actions with bordering nations are strengthen, and that enforcement of environmental law is ensured.

South, Southeast Asia, and China

All countries in Asia have committed to the Convention on Biological Diversity's Strategic Plan for Diversity in 2010. Asia is home to a number of global biodiversity "hotspots", yet rapid economic development, population growth (Asia has population density 1.5 times the global average), and an erosion of traditional practices have resulted in habitat loss and degradation. Asia currently has 10,00 protected areas; this covers only 13.9% of terrestrial environment and 1.8% of marine and coastal areas that are in danger. With critically low amounts of land protected within national jurisdiction, it is imperative that Asian countries increase the amount of protected area coverage. Many Asian countries have taken initiative to address this issue. In 2013, the first Asia Parks Congress took place in Japan. The Congress aimed to establish a regional partnership of the Aichi Biodiversity Targets and effective implementation of the Programme of Work on Protected Areas of the Convention on Biological Diversity. Despite such initiative, much work is necessary to preserve the biodiversity of Asia.

Case Studies

Costa Rican Biodiversity

Costa Rica is a distinguished example of successful biological preservation. Holding 6 percent of the world's biodiversity on top of a footprint making up 0.03 percent of the globe's surface area, makes the republic an important biodiverse resource. The nations tropical latitudes, as well as the variety of ecosystems that have developed in the unique Central-American region have allowed for the fostering of a wide range of species, many of which have been found to be useful to humans.

The biological and ecological resources of Costa Rica allow for large developments and demonstrate gains to be made through their preservation. Ecotourism has been a driver for the economy, as well as partnerships with drug companies, like the Costa Rican National Institute of Biodiversity and American pharmaceutical company, Merck, to produce medications.

In response to their own recognized and prized resource, the Costa Ricans have developed a law called the Costa Rican Biodiversity Law of 1998 based upon the United Nations Convention on Biological Diversity, which aims to uphold three objectives of sustainable use of natural resources, equitable use of said resources and biodiversity conservation. Along with other national acts and laws which support preservation of biodiversity, the country engages in international discussion and treaties in order to ensure continued ecological benefits.

Because of action that has been taken on the part of the Costa Rican Government, more than a quarter of the country's land area has been preserved in national parks and reserves, with additional creation of marine preserves on both the Caribbean and Pacific coasts.

Further Research

- https://www.unenvironment.org/explore-topics/ecosystems/what-we-do/preserving-our-ecosystems
- https://www.unenvironment.org/explore-topics/forests/what-we-do/supporting-people-and-biodiversity
- https://www.cbd.int/2011-2020/

Guiding Questions

1. How do the economic, social, and political impacts of preserving biodiversity vary across nations? Consider your nation's stance on this issue, and what policies it might implement to benefit a diverse range of perspectives.
2. In what ways can environmental legislation develop sustainably around the world?
3. What are specific areas that your country has acknowledged as being in critical condition (if any)?

4. Where will funding for initiatives and programs take place? How can your country adhere to policy and provide creative solutions to the issue?
5. What actions has your country taken on the preservation of biodiversity? Think policy, land preservation, partnerships, and funding.