

United Nations Environment Programme

Topic A: Marine Life

Topic B: Water Scarcity



Chair: James Noyes

Vice Chair: Mia Carr

Hello Delegates!

My name is James Noyes and I will be your Chair for the GBSMUN Environment Programme! I am a senior at Glenbrook South High School and have been involved in Model UN for the past four years. Along with Model UN, I am a sports director and live host for Glenbrook South's radio station, WGBK. Outside of school, I enjoy working out, nature, and spending time with friends and family. I have participated in the GBSMUN conference for the past 3 years, and I'm excited to host an engaging, dynamic committee this year.

GBSMUN was my first conference freshman year and I'm grateful for that. I learned a lot about Model UN that day, and found out that I truly had a passion for it. While I was extremely nervous, I finally volunteered to speak about halfway through committee, and discovered that it really wasn't that bad at all. I hope that all delegates can learn from this conference like I did, and I encourage everyone in this committee to push their comfort zones. It's the only way we grow!

In this committee it's important delegates work together to come up with resolutions for the situation. If you have any questions about this committee or about Model UN itself please feel free to email me. During committee, please do not hesitate to ask any questions you may have. I'm honored and beyond excited to be chairing GBSMUN VIII UNEP.

Regarding position papers, they should be submitted as a paper copy on the day of the conference

Sincerely,

James Noyes

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History of the Committee

The United Nations Environment Programme (UNEP) is a sub committee of the United Nations General Assembly that is considered to be the leading body that helps create the global environmental agenda, promote sustainable development with environmentally-focused initiatives, and advocate for the Environment. UNEP was created after the Stockholm Conference in 1972. The environmentalist movement was starting around this time, and after the announcement of Earth Day in 1970, it seemed foolish that there was no UN agency that dealt with the protection of the environment and human interactions with the environment. Today, UNEP is one of the biggest and most vital agencies in the United Nations, and the world. According to unep.org, ¹“UN Environment work encompasses:

- Assessing global, regional, and national environment conditions and trends
- Developing international and national environment instruments
- Strengthening institutions for the wise management of the environment’

The overall mission of the United Nations Environment Programme is, “To provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations.”

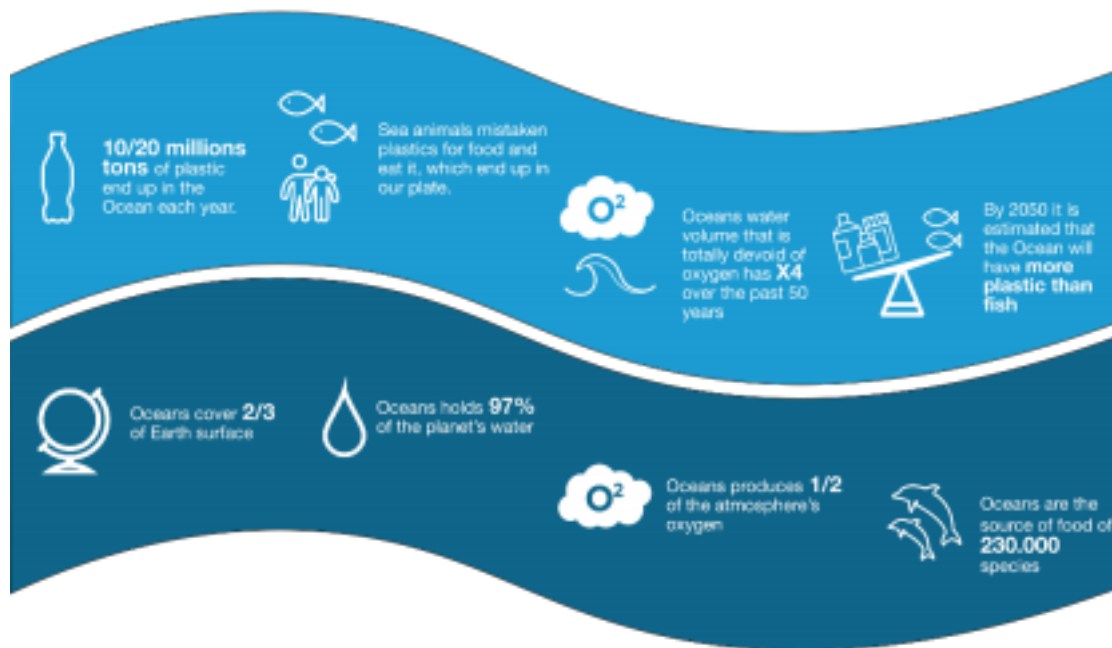
TOPIC A: MARINE LIFE

History of the Problem

Over the past century, the average height of the sea has risen consistently—less than a centimeter every year, however, these little additions add up over time. Today, the sea level is 5 to 8 inches (13-20 centimeters) higher, on average, than it was in 1900. The sea level started rising in the late 1800s, soon after the world started burning coal, gas and other fossil fuels for energy. When burned, these high-energy fuel sources send carbon dioxide into the atmosphere. Carbon dioxide absorbs heat from the sun and traps it, warming the atmosphere and the planet. The heating of the ocean is creating an unfit living space for the marine life that calls the ocean their home. Animals that rely on low-lying habitats will be impacted by sea level rise. Many birds use coasts and coastal ecosystems for breeding, laying eggs, finding food, or simply as a place to live. Sea turtles lay their eggs on beaches, returning to the same location every year. When beaches erode, or are covered by rising seas their options become more and more limited.² Oil spills are another issue that has greatly affected marine life. The largest offshore oil spill in

U.S. history, the Deepwater Horizon oil spill, released 134 million gallons of oil into the Gulf of Mexico over a period of 87 days, fouling 1,300 miles of shoreline along five states. The scientists concluded that the Deepwater Horizon oil spill killed thousands of marine mammals and sea turtles, and contaminated their habitats. To clean oil from the open water, 1.8³ million gallons of dispersant, substances that emulsify the oil, thus allowing for easier metabolism by bacteria, were pumped directly into the leak and applied aerially to the slick oil. It was estimated that up to 65,000 imperiled turtles had died during 2010 alone, mostly as a result of oil contamination. It was also estimated that some 300,000 turtles, some of which were originally from breeding populations in other parts of the world, were in the region of the spill when it occurred, leading scientists to point out the global impacts of the disaster and how this disaster still impacts the ecosystem today. In addition to oil pollution, with the rise of⁴ industrialization, water pollution became a major crisis. Factories found water sources, especially rivers, a convenient means of waste disposal. The trend continued well into the twentieth century. The Cuyahoga River in Ohio has caught fire several times since the 1930s, a result of oil slicks and flammable industrial waste dumped in it. A fire on the Cuyahoga in 1969 led to the enactment of the 1972 Clean Water Act (CWA). The CWA prohibits pollutants' discharge into navigable waterways, and there is no doubt it has improved water quality in the United States considerably. However, there is no realistic standard as to how clean is clean, and the act has been criticized for wasting money without effective controls and monitoring systems. There is also the difficulty inherent in controlling nonpoint source pollution—pollution from diffuse or not-easily identifiable sources—a harder task than controlling point source pollution, which can be predicted, controlled, and monitored. The post World War II era saw an explosion of industries and technological advances in developed nations, ranging from engineering to medicine. Many

advances that occurred during wartime proved invaluable in peacetime. Antibiotics saved millions of lives, as did pesticides such as DDT, a compound that greatly reduced the incidence of typhus during the war, and later helped control malaria worldwide. But many industrial waste byproducts found their way into the water, either through direct dumping by companies, or through leaching into groundwater from dumping sites. These by-products cause massive wildlife die offs.



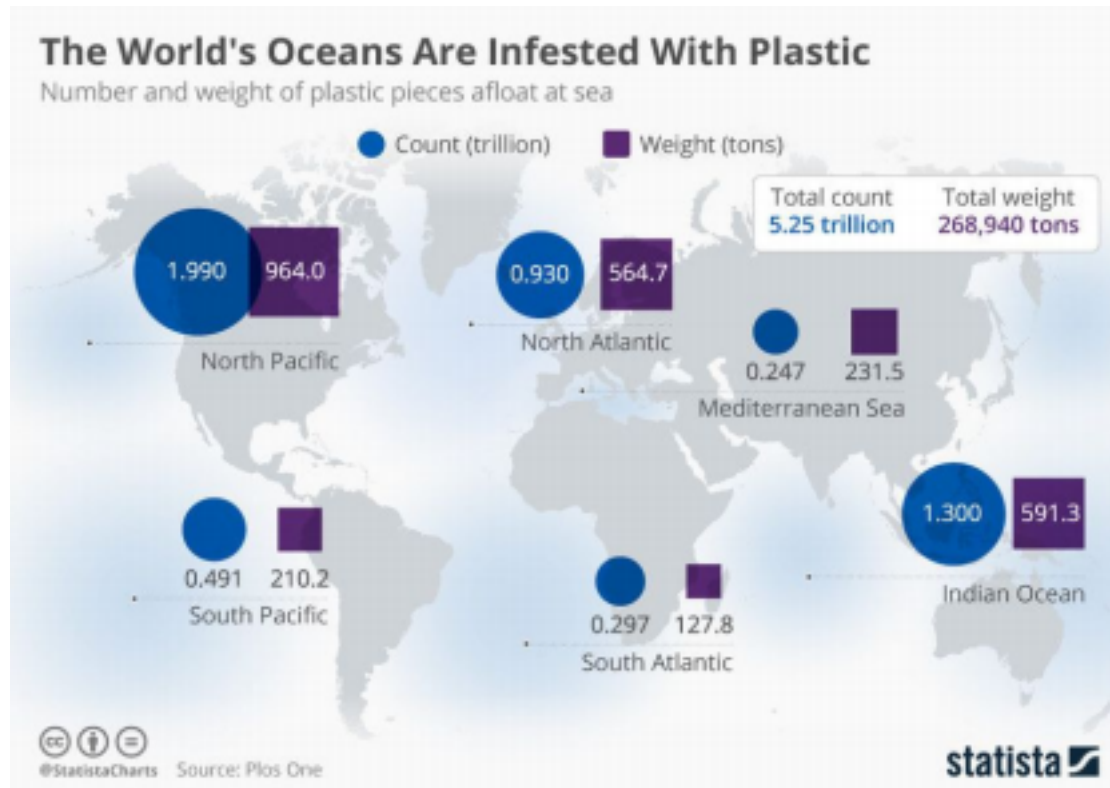
Status of the Problem

With little protection of marine life across the world, fish and many other aquatic species are facing a crisis. A main cause of this issue is plastic pollution. Plastic is not biodegradable and is made to last forever. With 90% of plastic not being recycled, over 12 million tons enter the oceans every year. 33% of all plastic is only used once. Single-use plastic straws, bags, coffee lids fill the oceans and the trash being eaten by marine life is entering the food chain. ⁶ Over 180 different species of all types of marine life have been found consuming plastic. The main cause of marine animals eating plastic is the fact that plastic comes in differing shapes and sizes, and they often mistake it as prey fish or other food. All marine life faces great danger once ingesting any form of plastic. Plastic waste kills up to a million seabirds every year because once plastic is ingested, it takes up too much space in seabird stomachs and results in them dying of starvation. Scientists estimate that 60 percent of all seabird species have eaten pieces of plastic, a figure they predict will rise to 99 percent by 2050. Unless action is taken soon to address this problem, scientists are predicting that the weight of ocean plastics will exceed the combined weight of all of the fish in the seas by 2050. ⁸

It was not until recently that countries have started implementing policies concerning this issue. 27 countries have banned single use plastics, such as plastic bags, but most countries favor partial bans. Currently there are 127 countries that have partial bans. Plastic bags alone ⁹ kill over 100,000 marine animals each year. The first country to enact regulations and bans on single use plastic was Bangladesh in 2002. African countries have been the toughest on regulating single use plastic thus far. Kenya enacted a ban on plastic in April 2017. Infringement has punishments of up to four years in jail or fines up to \$40,000. Rwanda's ban on ¹⁰ plastic bags, which is similar to Kenya's, has created a plastic bag black market. Wealthier, industrialized countries generally use and produce the most plastic. The United States contributes as much as 242

million pounds of plastic trash into the ocean every year, and has made no regulations thus far. Recently the United Nations has worked to raise awareness on the problem through its Clean Seas campaign.

Another issue destroying marine life populations is the enormous garbage islands that are floating in the oceans. The Great Pacific Garbage Patch, located between Hawaii and California is the largest of five islands of floating debris. As of March 2018, the island has grown to over 600,000 square miles. That is more than twice the size of Texas . Despite the colossal size of ¹¹ this dump, no governments have moved to take action because the islands are drifting in international waters. So far, only private organizations, such as the Ocean Cleanup Foundation, have stepped in to help clean it. These ocean patches of garbage form from litter scattered across the ocean that follow the ocean currents and eventually condense in a vortex shape. These garbage islands blanket the surface of the ocean and block sunlight from getting through. This has destroyed plankton populations in these areas and utterly disrupted the natural food chain .¹² Many animals also get caught and suffocated in the waste, or they end up mistaking it for food and eating it.



The loss of coral reefs across the globe is also having a large impact on marine life populations. The Great Barrier Reef has faced destruction from coral bleaching leading to the death of many fish and long term problems. In 2016, the Great Barrier Reef experienced mass bleaching. According to Dr. Andrew Hoey in the *Global Change Biology*, “Prior to the 2016 mass bleaching event, we observed significant variation in the number of fish species, total fish abundance and functional diversity among different fish communities... six months after the bleaching event, however, this variation was almost entirely lost.” Coral reefs are dying at growing rates as water temperature is rising because of climate change. Coral reefs sensitivity to temperature change is different for each reef but every reef does experience some effect from changing water temperature. In addition to providing a habitat to many fish, many species of

fish feed off the reef. As noticed from the Great Barrier Reef, the fish who feed off reefs experienced the most loss in population. ¹³

Overfishing also threatens marine ecosystems. When overfishing occurs, the breeding population becomes too depleted to recover. Overfishing typically occurs from wasteful hauls of unwanted fish. Because of overfishing, 35 percent of the world's fisheries are in danger. Ways to regulate overfishing include fishing quotas, closed ¹⁴ seasons, and licensing. New Zealand, Australia, Iceland, Canada, and the United States use Individual Transferable Quotas to manage overfishing. China manages their overfishing by banning fishing in the South China Sea for a period each year. Many countries have been rumored to lie about the fishing rates but no formal accusations have been made. Private companies have also worked to limit overfishing. One private company, Oceana, worked with former Chilean president Michelle Bachelet's administration to ban bottom trawling in 98% of the country's waters, protecting an area the size of Italy. ¹⁵

In 2015, the United Nations worked to create its Sustainable Development Goals. These goals were created to create a sustainable future on Earth. Goal 14 specifically targets conservation and sustainability of the oceans, seas, and marine resources: "Marine protected areas need to be effectively managed and well-resourced and regulations need to be put in place to reduce overfishing, marine pollution and ocean acidification". Within the goals, there were targets aimed to be achieved by 2020 and 2030. One of 2020 targets is to "effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time possible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics". This goal was made to be

achieved by all nations but at this time, it is not yet achieved. ¹⁶

Potential Solutions

Many regions have put different bans and restrictions on plastics in order to reduce pollution in the ocean. Peru has restricted the use of single-use plastic by prohibiting visitors to bring it into natural and cultural protected areas like Machu Picchu or museums. San Diego has banned styrofoam food and drink containers, the largest city in California to do so. A plastic straw ban began in D.C. which fines businesses that offer them. 250 organizations that contribute to 20 percent of the world's plastic packaging production have committed to reducing waste and pollution, in an initiative known as the "New Plastics Economy Global Commitment." The European Union has also approved a bill to ban single-use plastics across the continent. These combined efforts have the potential to drastically reduce the presence of plastic in oceans through encouraging the implementation of sustainable practices and reusable products.

Participating countries such as Argentina, Chile, and the United Kingdom are being urged to overhaul the International Whaling Commission (IWC). It's important that it close loopholes used to legitimize commercial hunts under the false impression that they are done for science. It would do so through shifting the objective of its scientific committee to conserving and modernizing its procedures to ensure transparency. Australia's prime minister visited Tokyo to raise his country's objections to whaling. Japan's so-called "scientific hunting" was deemed

illegal at the International Court of Justice.¹⁸

The Office of National Marine Sanctuaries is the Trustee for an underwater park network covering over 600,000 square miles of marine waters and Great Lakes waters. This includes 14 national marine sanctuaries, as well as Papahānaumokuākea and Rose Atoll national marine monuments. The national sanctuaries perform monitoring programs specific towards the information needs of each one, targeting topics involving natural processes, human influences, and living resources. People are able to find common ground with these national sanctuaries, and discuss possible solutions through sanctuary education and outreach efforts. The success of these sanctuaries depend on community involvement, which is heavily encouraged. These sanctuaries¹⁹ are a step towards preserving biodiversity, or variety, in marine species.

Many different policies can be enacted in order to encourage healthy marine life, whether they act to remove elements that can be harmful or establish methods to preserve what's already healthy. Pollution, inhumane fishing practices, and marine sanctuaries are three effective examples of keeping marine life in good health. Many other similar policies can be enacted to further encourage the health of sea life.

Questions to consider:

1. How can we create solutions that are economically feasible while also improving the oceans and marine life?
2. How should the protection of smaller nations be balanced with the interests of the larger

nations?

3. Is there a proper way to address the pollution that has already occurred? What is it?
4. How do we address pollution that occurs or has occurred in international waters?
5. What should be done to address the already existing garbage patch and how can we prevent these from occurring in the future?

Topic 2: Water Scarcity

History of Problem:

Beginning in the 1700s, advancements in industrialization have led to increased urbanization in large cities. The need for factory workers drove poorer farmers and people in the countryside to cities, and urban populations boomed. This created the need for clean water supplies and sanitation, a relatively new pressure at the time. The first examples of water shortages appeared in historical records from the 1800s, a result of this continued urbanization. In 1854, Dr. John Snow discovered a link between water and the spread of cholera during a fire outbreak in London. Cholera is a disease which can lead to dehydration if left untreated, caught from either food or drinking water contaminated with *Vibrio cholerae*. It's been nicknamed the "blue death" because so many fluids can be lost that a person's skin can become tinted blue-gray. Eventually, the number of water systems increased to accommodate larger populations. In 1866, the United States contained 136 public water systems; there were 3,000 by the turn of the century.²⁰

Despite this increase in global water systems, more than 11 billion people have died from drought since 1900, while affecting an additional number of people exceeding 2 billion. This consists of a majority from less developed countries. The U.S. Clean Water Act of 1972 updated legislation from 1948 aimed to control water pollution, and funded the construction of sewage treatment plants.¹⁶ Water scarcity became an especially large issue since the late 1980s, where many indicators were developed to assess the status of water scarcity internationally. In 1989, the Falkenmark indicator was developed to simply calculate water scarcity, and requires: the number of people living within a laid out location, and the volume of water available within that area. Water available per person is then calculated in cubed meters/cap/year. It relies on population, leading to the Water Crowding Index (WCI) that measures the number of people per unit of available water. The threshold for water scarcity is a value of 1,700 cubic

meters/cap/year. If it falls below 1,000, the area experiences high water scarcity. Below 500 establishes absolute scarcity. However, it's important to note that the indicator overlooks temporal variability and drivers of economic demand. Management practices and infrastructure aren't considered, and the threshold doesn't accurately reflect spatial distribution of demand within and between the domains over which the index is calculated.

Publications on indicators during and after the 1980s continued to increase, and were straightforward with a focus on surface water and groundwater. These indicators received criticism for neglecting the important role of green water, or soil moisture fed by rainfall, and other spatial and temporal variations. More sophisticated approaches were developed following 2000, incorporating more aspects of water such as its quality, green water, and environmental flow requirements. However, these updated indicators have been applied less so outside of their research groups than were the originally criticized indicators.²¹

Overall, water scarcity has grown largely due to population growth, economic development, and dietary shift towards more animal products. The U.N. General Assembly designated March 22 as World Water Day in 1993, to advocate for the sustainable management of freshwater resources and to highlight its importance.¹⁶

Status of the Problem:

By 2025, it is estimated that at least two thirds of the world population will face water shortages. Throughout the world, there are over 844 million people with a lack of clean water.

²² In addition to the millions of people that are lacking clean water, 2.3 billion people around the world live without access to basic sanitation. Without basic sanitation, people are in danger of contracting dangerous diseases. The lack of clean water results in families and communities being stuck in poverty for generations. ²³

The water shortages across the world stem from numerous issues. Climate change has been affecting weather patterns causing shortages and droughts throughout the globe. Over half the world's wetlands have disappeared due to this. The rapidly growing human population is stressing water systems as well. 41% of the world's population lives in river basins that are facing water shortages. The additional population growth is causing a greater need for food, shelter, and clothing, thus resulting in additional pressure on freshwater through the production of commodities and energy. In addition, rivers and lakes have become too polluted for drinking, and many are drying up from droughts. Agriculture consumes more water throughout the world than any other industry, consuming 70% of the world's freshwater. In many agricultural areas water is used inefficiently and is wasted. Poor irrigation is the main cause of the inefficient use of ²⁴ water. Large, industrialized countries such as India, China, Spain, Australia, and the United States, are at the point of reaching their water limits due to agriculture, industry, and population size.

River basins are a good example of how the stress over lack of water can boil over internationally. Over 260 river basins are shared by two or more countries. In the absence of strong institutions and agreements, changes within a basin can lead to transboundary tensions. When major projects proceed without regional collaboration, they can become points of

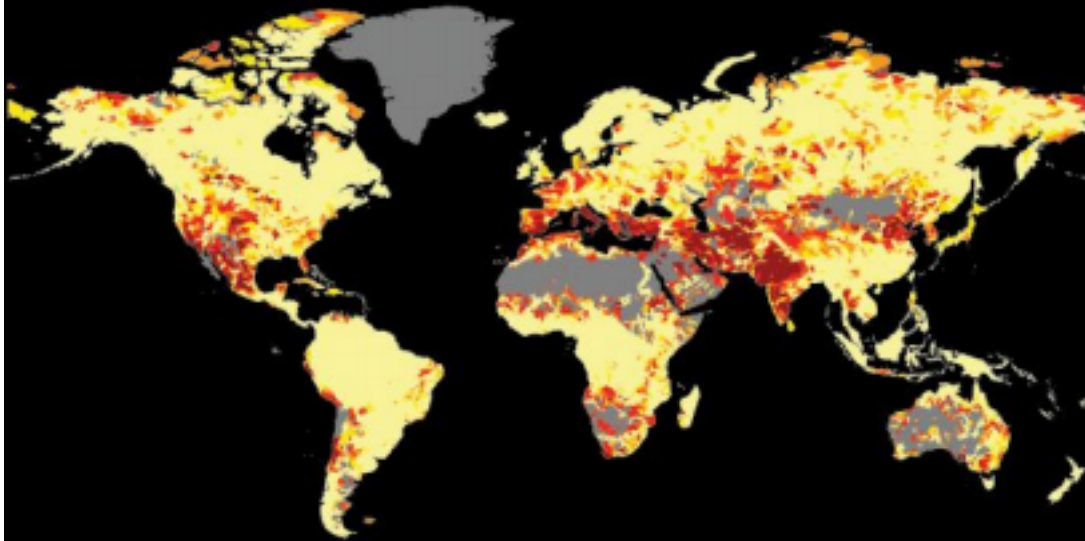
conflict, heightening regional instability.

12 out of the 17 most water-stressed countries are in the Middle East and North Africa (MENA). The region is hot and dry, so water supply is low to begin with, but growing demands have pushed countries further into extreme stress. Climate change complicates matters further; the World Bank found that this region has the greatest expected economic losses from climate-related water scarcity, estimated at 6-14% of GDP by 2050. India's water challenges extend beyond current events. Last year, the National Institution for Transforming India (NITI Aayog), a government research agency, declared that the country is suffering from the worst water crisis in its history, and millions of lives and livelihoods are under threat." Aqueduct's findings put this crisis in context: India ranks 13th for overall water stress and has more than three times the population of the other 17 extremely highly stressed countries combined.²⁵

While the world's population tripled in the 20th century, the use of renewable water resources has grown six-fold. Within the next fifty years, the world population will increase by another 40 to 50 percent. This population growth, coupled with industrialization and urbanization, will result in an increasing demand for water and will have serious consequences on the environment.²⁶

17 COUNTRIES FACE EXTREMELY HIGH WATER STRESS

BASELINE WATER STRESS



Source: wri.org/aqueduct

 **AQUEDUCT**

 **WORLD RESOURCES INSTITUTE**

Possible Solutions:

Many countries have attempted different ways of combating this issue. In response to the 2017-2018 water shortage in Cape Town, Nick Sloane, an expert in marine salvage, formulated a plan to tow an iceberg from Antarctica to help the struggling region. This plan would have cost more than \$200 million and while this crisis was averted, Sloane still hopes to someday carry out this plan.

Like Sloane, countries are getting extremely creative with their ideas to collect and conserve ideas. Since 2013, Morocco has been utilizing a system of nets that catch fog and convert it to water. Condensation builds up in the mesh netting and collects in troughs directly under the nets, which is then transported via a piping system. The nets have been greatly beneficial for Morocco; 800 people in 15 nearby villages receive water pumped from the nets.

The recent Indian droughts have greatly affected the farmers in the region who struggle to find water to keep their crops alive. A company called Khethworks, which started as a project at the Massachusetts Institute of Technology and is located in the city of Pune, aims to help farmers through their solar-powered irrigation system. According to the company, switching from diesel irrigation methods to the solar-powered irrigation system will increase a farmer's annual profits by 170 percent.

In Australia in 2018, scientists at Australia's Commonwealth Scientific and Industrial Research Organization in Sydney developed a filter that will help desalinate water. The filtration system is made out of graphene, a material that researchers say is more effective at separating multiple contaminants from water. The researchers are hoping to find partners to help scale the

technology so it can be used for household and urban water filtration.

Even the United States has taken action to conserve water, spurred on in large part by the crisis in Flint, Michigan. Infinite Cooling is a U.S based company that started at MIT that seeks to recover water from power plants' cooling tower exhausts. According to the company, power plants use nearly 39% of the country's total water withdrawals. Their patent-pending technology uses electric fields to capture the water from the plumes leaving the towers. The company says this technology will reduce the water wasted by plants by 20-30%.²⁸

There are many different ways to confront water shortages. Whether it be filtering water or desalinating seawater, it is urgent that we work together to conserve and reduce water waste before the effects are unchangeable.²⁹

Questions to Consider

1. How can we create solutions without infringing on national sovereignty?
2. What role do private companies play in helping the global water supply?
3. What are short term solutions to help countries already facing the country?
4. How can we address countries facing a water shortage in the future?
5. How can we create solutions that ensure the safety of smaller nations that do not have the

means to tackle the issue on its own?

6. What role does climate change play in the water shortage and how does it need to be addressed?

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