BMUN LXXII

UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)

LXXII
SEVENTY-SECOND SESSION

LETTER FROM THE CHAIR

Hi delegates!

I'm excited to welcome you all to the United Nations Environmental Programme at BMUN LXXII! My name is Emma Wu (she/her), and I will be your Head Chair. Here's a bit about me: I grew up in the South, and my family moved around a lot, but we eventually settled in Chattanooga, Tennessee (and sorry to disappoint, but no, I do not have a southern accent). Coming to Berkeley was definitely a big change for me, but I absolutely love Berkeley and the Bay Area! I am now a sophomore at Cal, and I am majoring in Environmental Economics and minoring in Climate Science. As you can probably tell from my areas of study, I love discussing environmental topics, so I am super excited to be the Head Chair for the UNEP Committee! Outside of BMUN, I am involved in a lot of legal work. I currently work in the U.S. Attorney's Office, and I help prosecute drug cases, financial crimes, and child abuse cases. Bringing victims closure in these cases has been extremely rewarding, and working with prosecutors affirmed my decision to go to law school after undergrad. In addition to these real cases, I also get to work on some fake cases with the Cal Mock Trial Team. I am both a witness and an attorney, and I love the theatrical aspect of Mock Trial. In my free time, you can find me library hopping, drinking copious amounts of coffee, or binge watching C-dramas.

This year, I chose two topics that encourage delegates to think of proactive environmental protection measures: Addressing the Environmental Impact of the Fast Fashion Industry, and Using Geoengineering to Combat Climate Change. In our discussion of the first topic, delegates will get the opportunity to think about how scientific issues have been politicized. We will dive into how large corporations pollute without consequences due to their political ties. As a committee, we will work together to hold these corporations accountable. When we move to our second topic, delegates will need to think one step ahead. Geoengineering is a double edged sword, and delegates will need to think about the future consequences of regulatory decisions. Geoengineering is challenging to understand because it is heavily science based. I myself struggled with understanding some of the technologies, so please do not hesitate to email me or ask me any questions you may have in committee.

Issues that the UNEP committee handles are extremely important to me because we as a society have become desensitized to the environmental crisis. People used to be shocked by the statistics, but they are now tired of hearing them. Taking climate science classes at UC Berkeley fueled my passion for environmental issues, and through the topics I have chosen, I hope to inspire some of you delegates to take action.

In this committee, I am also joined by my wonderful Vice Chairs Sora Kanosue and Emily Ahn. Sora is a Master's student in Electrical Engineering and Computer Science researching how computing can be made more accessible to non-programmers. Growing up, he lived in Thailand, Nepal, and South Korea, before finishing high school in New York City and coming to Berkeley for college. In his free time, he loves playing volleyball and Minesweeper.

Emily is a freshman at Cal, intending to major in Environmental Science with a biological concentration. She became passionate about global environmental issues through Model UN and hopes to pursue a career that lies at the intersection of environmental sciences and medicine. Born and raised in Cypress, California, her favorite pastime is going on morning runs at nearby hiking trails. She also enjoys making beaded jewelry, sticker-collecting, reading Japanese or Celtic mythology books, and journaling.

Best,

Emma Wu
Head Chair of UNEP
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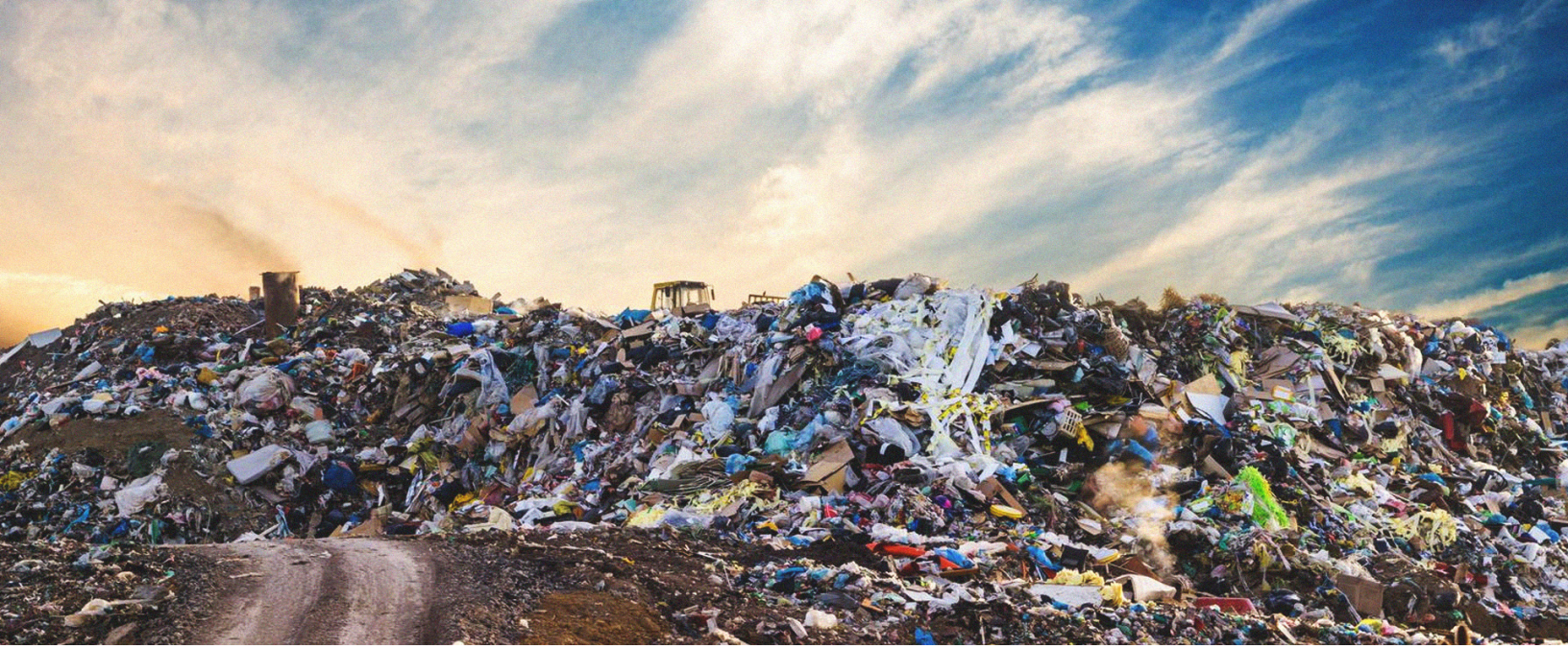


TOPIC A: ADDRESSING THE ENVIRONMENTAL IMPACT OF THE FAST FASHION INDUSTRY

TOPIC BACKGROUND

History of Fast Fashion

Global fashion trends perpetuate a cycle of buying more and wearing less. As one fashion season ends and the next approaches, people quickly discard their old clothes and buy new clothes ("The Environmental Costs of Fast Fashion"). This cycle is part of a process known as "fast fashion," a name which comes from the rapid design, production, and marketing of the clothing. Fast fashion refers to cheaply produced and priced clothing that is quickly brought to the market to capitalize on current fashion trends (Maiti). This market is extremely lucrative for clothing companies because they are able to use trend replication and low-quality materials to minimize production costs. Because fast fashion is so cheap for consumers, it has led to an industry-wide movement toward overconsumption (Stanton). Overconsumption is not only costly to the individual, but also comes at an enormous cost to the planet.

Before the 20th century, the fashion industry operated on a four-season system. Designers worked on collections for months, hoping to accurately predict future styles (Stanton). This changed in the 1960s when a company called Scott Paper Company began

selling dresses made entirely of paper. They sold for USD 1.25 each and were meant to be worn once or twice before being discarded, kickstarting the industry's transition to modern fast fashion. Although disposable clothing failed to gain a permanent foothold in the clothing industry, the concept resurfaced in the 1990s when Zara revolutionized the fashion industry (Maiti). Zara's design process took only 15 days to go from design sketches to being sold in stores, allowing them to rapidly adapt to new trends (Maiti). Zara's success led other fashion brands such as UNIQLO, Forever 21, and H&M to quickly follow suit (Maiti).

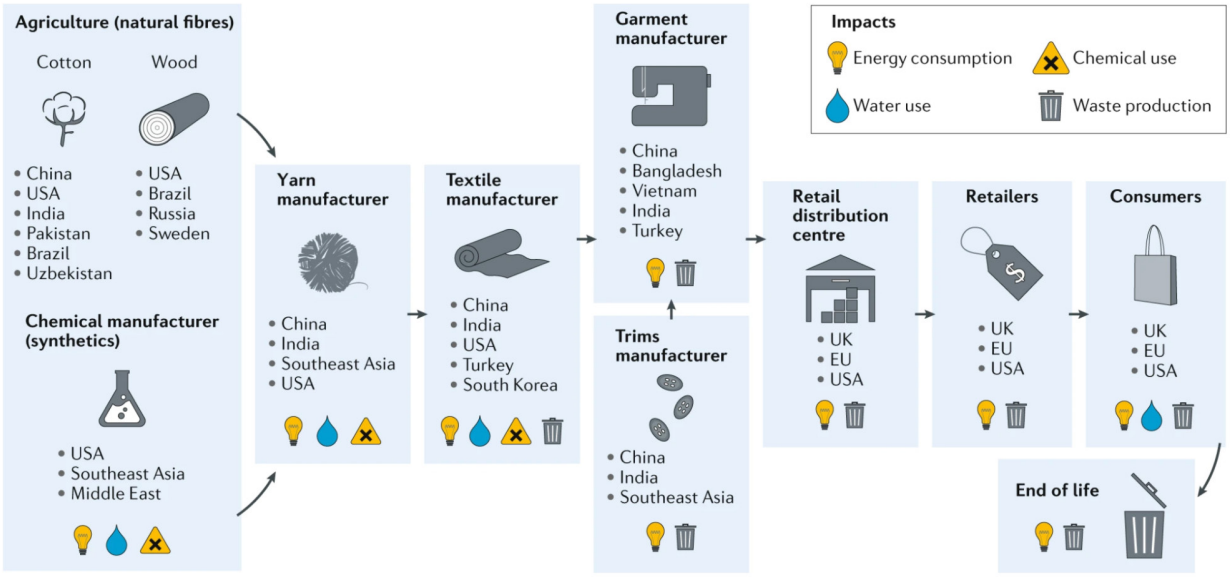
Fast fashion brands now produce around 52 micro-seasons per year, or one new collection per week (Stanton). Companies are able to do this by only making small batches of clothing each day. When they see that an item is selling well, they quickly mass-produce it, allowing them to capitalize on trends (Hendelmann). These test batches of clothing allow companies to see what styles customers like at a relatively low price, a business model that has completely upended consumer behavior (Hendelmann). Consumers are constantly trying to keep up with fashion trends, and with 52 micro-seasons a year, consumers are spending much more than they did before this practice took over the industry. Customers are now buying 60% more clothing than they did only 15 years ago (Ranzetta). Moreover, they only keep this clothing for only half as long as they used to. A shocking survey done in Britain showed that one in three young women consider clothes "old" after wearing them once or twice, and one in seven women consider it unfashionable to be photographed in an outfit twice (Ranzetta). Fashion companies have convinced customers that their wardrobes need to be constantly evolving, resulting in more and more clothing waste every year.

Environmental advocates protesting Zara's business model

Environmental Impacts of the Supply Chain

This shift in the fashion industry is harmful to both the consumer's wallet and the environment. It is estimated that the fashion industry is responsible for approximately 10% of global greenhouse gas emissions (Stallard). To make matters worse, the manufacturing process for clothing pollutes the environment from start to finish through the excess use of water, material, chemical, and energy (Niinimäki). In order to understand the environmental impact of clothing production, it is important to first understand the clothing supply chain itself. The three main stages of clothing production are:

1. Raw materials are processed into textiles
2. Textiles are made into clothing items
3. Clothing items are sold to customers

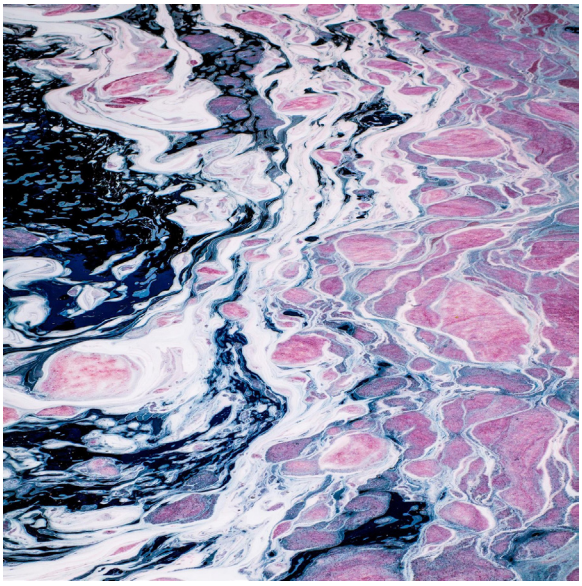


Clothing manufacturing process

Clothing manufacturing process

Water plays a major role during the initial stage, when raw materials are converted into textiles. One reason for this is the water-intensive nature of cotton, both as a crop and in its processing into textiles. Cotton cultivation itself accounts for 92% of the water footprint of a pair of jeans ("The Water Footprint of the Blue Jean"). Textile processes such as bleaching and dyeing the jeans make up the rest of the water footprint ("The Water Footprint of the Blue Jean"). The resulting wastewater, which can be harmful to both humans and marine wildlife, then finds its way into the ocean due to a lack of regulation in many developing countries (Le). Alternatives to cotton have the potential to be even more damaging to the environment. Viscose, a fiber made from wood chips, was proposed as a cheaper alternative to cotton in the 1890s (Le). Over 70 million trees are cut down each year to supply viscose to the fashion industry, and the wood for viscose is often unethically sourced (Cho). Another environmental concern at this stage is microplastic pollution. Producers have increasingly turned to synthetic materials such as polyester and nylon to reduce prices (Le). These materials contain plastic microfibers that make the clothing extremely difficult to break down (Le). This means it will ultimately sit in the landfill for much longer. When it eventually does break down, microplastics from clothing fibers enter water systems and become a part of our food chain (Le).

The second stage of production introduces a new set of environmental concerns, as turning textiles into clothing also produces tons of waste water. Toxic chemicals like sulfur, naphthol, and vat dyes are used in the dyeing process, and these chemicals are then dumped into the waters of developing countries such as Bangladesh (Kant) (Le). It is estimated that the dyeing process is responsible for around 20% of the world's industrial water pollution (Le).



Pollution from clothing dyes

The third stage is distribution to customers. Transportation of clothing from manufacturer to distributor to customer results in high greenhouse gas emissions, especially when clothing is being shipped overseas. Carbon dioxide emitted from cargo planes, freighters, and delivery trucks all contribute to emissions (Igini).

In addition to transportation emissions, customers are now consuming more than ever, creating more pollution per person. Once a piece of clothing is out of style, it is likely to make its way to a landfill because it is extremely difficult to recycle clothing. Wearing and washing clothes weakens the polymers in clothes, and by the time they are discarded, they are too weak to be turned into new fabric, meaning that less than 1% of clothing is recycled (Cho). When clothing does end up in landfills, it can take centuries to decompose. Natural fabrics such as cotton take only a few months, but synthetic fibers can take up to 200 years to decompose (Cho). In the process, they produce methane, a greenhouse gas more than 25 times as potent as carbon dioxide (Cho).

A final issue in the supply chain is the prevalence of buy-back contracts. Producers tend to produce more than the anticipated demand because the loss from being out-of-stock is often greater than the cost of holding excess inventory (Niu). If the retailer is unable to sell the extra units produced, the producer is forced to buy back the unsold clothes (Niu). The retailers then throw away these bought back clothes. While this supply chain fixture generates more economic profit for the companies involved, it comes at the expense of increased clothing pollution.

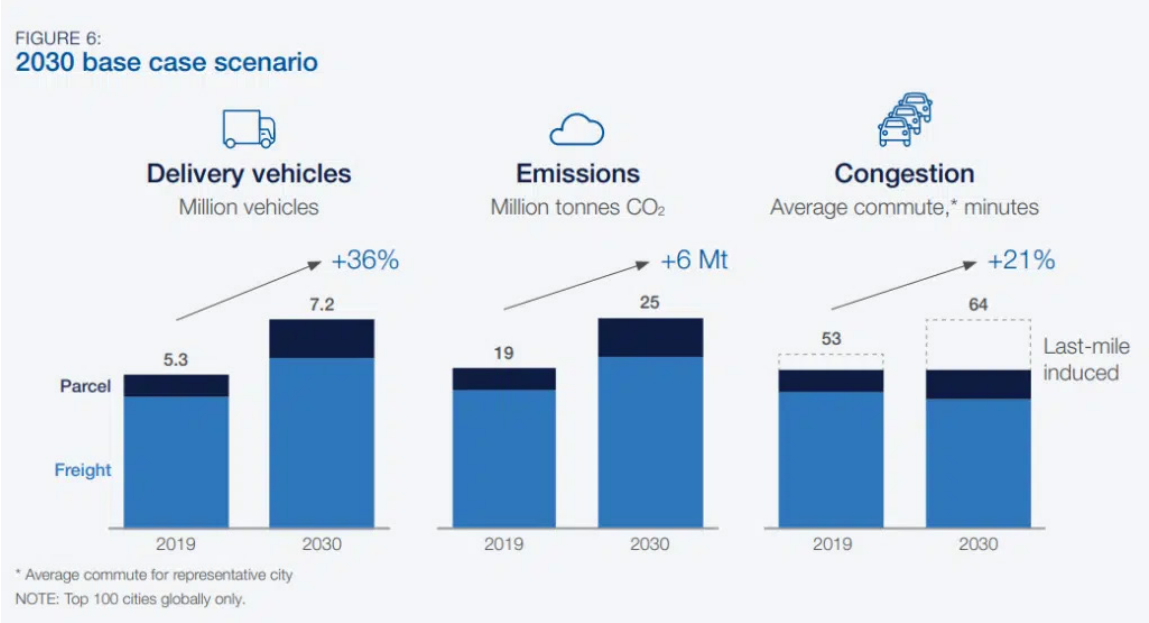
Current State of the Industry

Global e-commerce has been steadily growing over the past decade, but the Covid-19 pandemic further magnified the growth of the industry by making online shopping a convenient and popular alternative to traditional shopping (Igini). Companies such as Amazon, Alibaba, and Walmart have monopolized online shopping and increased consumers' delivery expectations (Igini). Consumers now expect goods to be delivered in one to two days and to return them without cost. While this is convenient for the consumer, it comes with high costs to our planet.

Modern consumerism has brought the global supply chain to a breaking point. Amazon provides consumers with convenience, low prices, and fast delivery; their business model has caused consumers to see this as a new norm (Igini). This is a problem for the global supply chain because shipping companies all around the world have had a hard time keeping up with the high demand for packages. In September of 2021, several industry groups representing over 65 million transport workers wrote an open letter to heads of state at the United Nations General As-

sembly, warning that global transport systems will collapse if consumers continue with their current shopping attitude (Igini).

The overwhelming amount of packages shipping companies have to deliver create enormous amounts of shipping emissions and waste. In 2020, the shipping and return of products accounted for 37% of overall greenhouse gas emissions (Igini). This is expected to only increase due to increasing demand. Packaging waste is another factor that contributes to increasing emissions. According to forest conservation group Canopy, three billion trees are grown each year to produce 241 million tons of shipping boxes (Igini). The plastic packaging in these boxes also produces 86 million tons of plastic waste each year (Igini). These plastics are difficult to recycle because they mostly consist of mixed materials, leading to less than 14% being recycled (Igini). Companies such as Alibaba are trying to develop more sustainable packaging, but these efforts are happening much too slowly and much too late (Igini).



Greenhouse gas emissions from transportation of packages are on the rise

Future State of the Industry

These environmental problems are expected to only get worse because the fast fashion industry is growing at a rapid rate. In 2022, the global market was estimated to be worth over USD 106 billion (Smith). The fast fashion industry's rapid growth can be attributed to two main reasons: its promotion on social media and the affordability of the clothing items produced. Fast fashion companies target the world's growing youth population and are able to capitalize on this market segment's demand for unique, trendy, and affordable items ("The Key Driver of Fast Fashion Market Growth Is Affordability"). These companies rely heavily on social media networks to relentlessly promote their most popular products,

especially on Instagram and TikTok. ("Global Fast Fashion Market Report and Strategies to 2032"). On top of social media promotion, fast fashion companies have been able to make clothes extremely cheap, both to produce and to buy. Consumers can now buy more clothes for the same amount of money, increasing their overall level of consumption. The rapid growth of this market presents a problematic imbalance, as clothing is being produced much faster than the waste can be cleaned up. In addition, companies are able to pollute with impunity, resulting in overwhelming amounts of pollution.

It is clear that this growing market needs to be regulated in order to prevent disastrous environmental consequences. Researchers and policymakers have discussed two possible regulatory measures: punishing companies and subsidizing sustainable efforts. In one 2017 transportation research study, researchers explored whether punishments or subsidies would be more effective in promoting a more sustainable fashion industry (Niu). Specifically, this study examined the sustainability of a "control" procurement strategy, in which companies order products they sell themselves, and an "agency" procurement strategy, in which companies delegate this ordering process to a third party company (Niu). Agency procurement strategies are more sustainable because they tend to result in lower order quantities, leading to researchers testing how fines and subsidies would influence which procurement strategy companies would choose. They found that punitive fines were not effective in persuading retailers to choose a more sustainable alternative, although they did have the benefit of increasing government revenue (Niu). In contrast, subsidies can encourage retailers to switch to the more sustainable "agency" procurement strategy (Niu). The downside of subsidizing is the financial costs involved (Niu). Although some research has been done on regulating the industry, there has been little action from governments themselves. Therefore, the UNEP must take action to address this issue.

PAST UN ACTIONS/INTERGOVERNMENTAL ORGANIZATION RESPONSE

United Nations Alliance for Sustainable Fashion

The United Nations has not passed any resolutions on fast fashion. They have, however, created the UN Alliance for Sustainable Fashion, with the goal of stopping the environmentally and socially destructive practices of fashion. This organization works toward this goal by collaborating with eight member organizations: Connect4Climate, the International Labor Organization, the International Trade Center Ethical Fashion Initiative, the UN Development Program, the UN Economic Commission for Europe, UN Environmental Program, the UN Global Compact, and the United Nations Office for Partnerships ("UN Alliance for Sustainable Fashion"). In addition to

working with these eight member organizations, the UN Alliance for Sustainable Fashion also partners with other environmental organizations on targeted projects. These include projects such as the Forests for Fashion Initiative, the Ethical Fashion Initiative, and the Blue Fashion Project (Meier). These projects all contribute to the Alliance's goal of promoting environmentally and socially sustainable fashion projects.

Through these partnerships, the UN Alliance for Sustainable Fashion has also identified a set of guidelines to promote sustainability. This plan includes the following steps:

1. **Implement stronger governance and policies to drive change:** This first step involves supporting new, innovative business models that leverage sustainable sourcing. Additionally, governments should share information on sustainable business practices and try to encourage more companies to follow suit (Meier).
2. **Encourage collaboration and sustainable financing to implement solutions:** The public sector and the private sectors are largely disconnected in the fashion industry, and more public-private partnerships could reduce future environmental damage (Meier).
3. **Change consumer consumption habits:** The UN can use global communications to change consumer behavior, such as by using UN ambassadors to run awareness-raising campaigns regarding overconsumption (Meier).

In theory, these steps would help reduce the environmental impact of the fashion industry. However, the effectiveness of these solutions is questionable because the language in these proposed solutions is extremely vague and does not provide clear solutions. There are also problems with the proposals themselves. Regarding the first measure, only certain countries have the financial resources in order to provide such subsidies. Providing subsidies is a costly endeavor, and even countries with the necessary financial resources may not be able to utilize subsidies to substantially change the fast fashion market. Sustainable clothing is extremely expensive, and countries would have to provide large subsidies to significantly bring down prices. The problem with the second proposal is that global tensions often prevent effective international cooperation. The Covid-19 pandemic has made the global political atmosphere more tense, and many countries are now more reluctant to agree to international collaboration (Shih). Moreover, countries have different environmental goals, so sharing information is sometimes not mutually beneficial. Addressing the third guideline, changing consumer behavior is almost impossible to do on a global scale. It is a micro-level change that consumers can make, but this change will never be large enough to resolve the issue. Additionally, some families can only afford to buy fast fashion items, as sustainable fashion brands are often more expensive. Furthermore, putting the onus on individuals to change their consumption habits can have the effect of shifting the blame away from the fast fashion companies that created this unsustainable business model into place in the first place.

ActNow Climate Campaign

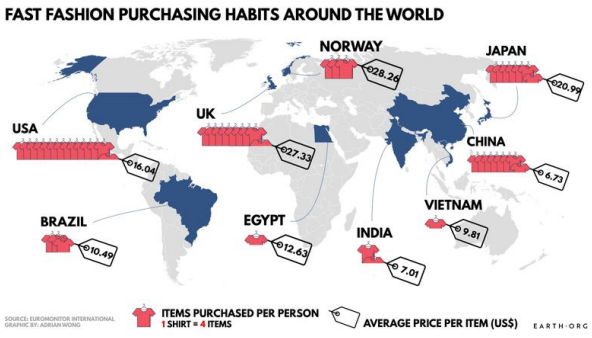
The United Nations has attempted to change consumer behavior on a large scale by launching the ActNow Climate Campaign in 2019 ("Actnow for Zero-Waste Fashion"). This was an educational campaign that encouraged individuals to participate in zero-waste fashion actions such as thrifting, reducing consumption, and upcycling ("Actnow for Zero-Waste Fashion"). This campaign launched with an app that allowed people to track their carbon footprint, and reached 3 million recorded actions ("With

Less than 100 Days to COP26, the UN's ActNow Campaign Mobilizes Strong Public Support for Climate Action"). While this campaign was great in reducing consumption at the micro level, it did very little in resolving the root problem: that corporations are polluting the environment, and that countries need to take action to address it.

INTERNATIONAL RESPONSES

There are two main categories that countries fit into: fast fashion producers and fast fashion consumers. The top fast fashion producing countries are China, Bangladesh, Vietnam, India, and Turkey ("Top 10 Exporting Countries of Textile and Apparel Industry"). Asian countries dominate the production process because they have cheaper labor and weaker environmental laws ("Fast Fashion in Asian Countries"). Many garment workers work in the "informal economy," which is neither taxed nor monitored by the government ("Fast Fashion in Asian Countries"). Because there is no legal framework to regulate worker's rights, labor sourced in these economies is cheaper. Fast fashion companies also benefit from the lack of environmental regulations in these countries. The main consumers of fast fashion are European countries, the United States, and other developed countries.

Top Consumers



United Kingdom

The United Kingdom is one of the largest consumers of fast fashion. The growing nature of the industry prompted the Parliament's Environmental Audit Committee to publish a report on fast fashion in 2019 ("Environmental Audit Committee"). This report acknowledged the upstream environmental impacts of the fast fashion industry, with a particular focus on the negative impact on water supplies. The committee then called for collaboration between the British government and businesses to create more sustainable clothing options for consumers as well as shift to business practices that produce less greenhouse gas emissions ("Environmental Audit Committee"). With regard to textile waste, the Committee proposed three actions:

1. Prohibit the landfilling of unsold clothing that can be reused or recycled (Carrington).
2. Changing compulsory education to include lessons on designing, creating, mending, and repairing clothes ("Environmental Audit Committee").
3. Impose a penny per garment tax to fund more sustainable management of clothing waste ("Environmental Audit Committee").

However, Ministers ultimately rejected these proposed actions. They claimed that they recognized the

importance of cleaning up clothing pollution, but they wanted to pursue other alternatives to address the issue (Carrington). The Environmental Audit Committee expressed its frustration with this decision, stating that the government is, "content to tolerate practices that trash the environment" (Carrington). They continue to push for environmental change in the United Kingdom.

United States

The United States is the world's single largest importer of textiles, importing a whopping USD 40 billion worth of textiles in 2021 alone ("Largest Textile Exporting Countries 2021"). Despite this, the U.S. government has yet to issue any formal report on the topic of fast fashion, nor has it passed any nationwide legislation to regulate the industry's environmental impact. The United States has stricter environmental laws and workers' rights laws for clothing made in the United States, but the country still imports enormous amounts of unethically sourced clothes. In 2022, Senator Kirsten Gilibrand introduced the FABRIC Act, a proposal aimed at regulating garment worker conditions and re-domesticating the garment manufacturing industry ("The FABRIC Act"). However, the majority of unethically sourced clothing are imported from other nations without workers rights or environmental protection laws, and this bill failed to address this huge issue. Other regulations on garment workers rights are emerging at the state level. For example, California recently passed a law requiring hourly wages for garment workers (Shao). While these pieces of legislation are a huge victory for garment workers domestically, they do not address the environmental concerns associated with fast fashion, nor do they improve working conditions for the world's largest garment producing countries.

China

Sales in the Chinese fashion market are projected to reach USD 336.8 billion by 2023. China's position in this issue is unique in that it is both a top consumer and a top producer. On the consumer side, Chinese consumers are a huge market segment in the fast fashion industry due to its huge population and growing middle class. This growing middle class has increased people's disposable income, some of which is being channeled into the fashion industry. Brands are strategically entering the Chinese market by partnering with local designers to create exclusive collections ("Fast Fashion in China - How Smart Brands Are Joining In?"). This allows them to offer something unique to their target audience, such as when the clothing company Uniqlo collaborated with KAWS to create a line of T-shirts for the Chinese market ("Fast Fashion in China - How Smart Brands Are Joining In?").

Top Producers

China

China is the world's leading textile exporter, and it became a hotspot for clothing companies in the late 1970s due to its low labor costs. In recent years, these costs have risen, but China still remains the world's leading textile manufacturer. Companies like Shein continue to rely on Chinese manufacturing, setting up over 6,000 factories across China ("The Shein Factory: A Large Clothing Manufacturing Facility in China"). China has gained significant financial capital from the fast fashion industry, but the government recognizes that it comes with environmental problems. In 2011, the government set an ambiguous but mandatory goal to reduce the energy and water consumption and pollutant emissions by an

increasing amount each year, while doubling the use of recycled textiles ("Where is China's Textile and Apparel Industry Going?"). Chinese manufacturers such as Esquel Group, TAL, and the Crystal Group have been identified as emerging leaders in improving environmental performance within factories ("Where is China's Textile and Apparel Industry Going?"). Despite this progress, China's reactive approach to environmental concerns is not enough to address the issue of fast fashion fully. The country remains the largest producer of fast fashion, and its environmental regulations are vague and lagging behind. Manufacturing countries like China need to be proactive in enforcing environmental regulations before this environmental crisis becomes even bigger.

Bangladesh

Bangladesh is another top fast fashion producer, with its garment industry earning USD 48.6 billion in 2022 ("Bangladesh May Clock US $ 48 Billion in Its Apparel Export Revenues in 2022: Apparel Resources"). In 2013, more than 1,000 workers died when an eight-story building that housed five garment factories collapsed (Fathi). Since then, Bangladesh has implemented better regulatory enforcement and safety standards to prevent another tragedy by upgrading structural, electrical, and fire safety standards (Fathi). In addition to better working conditions, some garment factories have also improved their environmental practices. In 2013, the International Finance Corporation launched the Partnership for Cleaner Textile, a program aimed at reducing energy and water consumption in Bangladesh's garment industry (Fathi). According to Krisno Kumar, a garment worker in a local factory, "We not only use less water and energy, but we can also do more production work over the same amount of time" (Fathi). Improving safety and environmental standards have made Bangladeshi companies more attractive to companies looking to green their supply chains (Fathi). Still, low wages and lack of total enforcement mean the industry is still far from being perfect.

Vietnam

In recent decades, Vietnam has become a hub for fashion companies like Zara, Mango, and H&M ("Fast Fashion to Ethical Couture: Vietnam's Design Evolution"). Vietnam's garment and textile exports now account for around 15% of the country's gross domestic product ("Fast Fashion to Ethical Couture: Vietnam's Design Evolution"). While this multi-billion dollar sector has helped drive positive economic growth, it has also negatively impacted the environment. The younger generation in Vietnam is becoming increasingly aware of these environmental impacts and is pushing fast fashion producers to become more environmentally friendly (Nhat). This generation is willing to pay more for sustainable products, forcing fast fashion brands to change their business models (Nhat).

CASE STUDIES

Chile's Atacama Desert

One infamous dumping ground for clothing waste is Chile's Atacama Desert. In 2021 alone, 39,000 tons of used and unsold fast fashion clothing was dumped in the desert in small portions known as micro-dumps (Glover). Some of this clothing was brand new, showing that companies like Old Navy, H&M, and Adidas, some of the top contributors to the dump site, are overproducing clothing (Glover). H&M released a statement stating that they take this issue extremely seriously, and that they plan to start a waste disposal and recycling process (Glover). However, fast fashion companies like H&M often make these claims as part of a facade of progress toward becoming an environmentally friendly company, while in reality engaging in greenwashing. Greenwashing is the practice of making a product or brand appear to be more environmentally friendly than it actually is ("Greenwashing, Definition and Meaning). While some clothing companies do dispose of their excess product properly, the vast majority of fast fashion companies are unwilling to do so due to the high costs associated with proper disposal.

These micro-dumps have had a huge impact on the locals who live in the area. The constant accumulation of clothing causes a buildup of toxic waste, which is exacerbated by the fact that the synthetic materials they contain can take centuries to decompose (Glover). This waste is then left to either rot or be burned, and this has negative health effects on those local residents (Glover). Moreover, these dumps attract disease-carrying insects, further putting the health of locals at risk. It is also important to note that these local communities are some of the poorest in the Alto Hospicio region (Glover). Fast fashion companies strategically choose dump sites where they know that local residents have little political power to voice their frustrations.

Chile's clothing dump site

Ecodesign for Sustainable Products Regulation - Successful Regulation

On March 30, 2022, the European Commission proposed a new Ecodesign for Sustainable Products Regulation (ESPR) (Eisenberg). The previous Ecodesign Directive only covered energy-related products, but this new proposal covered almost all categories of physical goods, including clothing items (Eisenberg). The directive established a framework for product design, reporting, and labeling requirements to ensure that products are environmentally friendly. Specifically, it has two categories of requirements.

1. **Performance requirements:** Products must meet certain standards for durability, energy efficiency, recyclability, environmental footprint and waste generation (Eisenberg).
2. **Information requirements**: Digital Product Passports proposed by the regulation to aim

enhance the end-to-end traceability of a product. The goal of these passports is to provide customers access to the product information to help them make informed choices when purchasing (Eisenberg).

The EU also proposed a new Textile Strategy, which includes an amendment to the ESPR. It aims to set legal requirements for different product groups, including clothing and footwear ("Final Eco-Design Regulation of the EU to Be Approved by 2023"). In addition to the digital passports, the Textile Strategy would require producers to inform consumers about the chemical content, repairability, and fiber composition of their garments ("Final Eco-Design Regulation of the EU to Be Approved by 2023"). The Strategy has yet to be approved, but it is expected to be passed by the European Parliament and the Council by the end of 2023 ("Final Eco-Design Regulation of the EU to Be Approved by 2023").

Shein's 2023 Brand Trip

In June of 2023, Shein sponsored four influencers on an all-expenses-paid trip to Guangzhou, China to tour one of its clothing factories (Gerstein). In return, these creators posted on social media praising Shein for their working conditions and environmental progress (Gerstein). Some creators even had the opportunity to interview workers, who said that they were happy with their wages and that Shein did not use child labor (Gerstein). This trip was clearly designed to clean up Shein's reputation after their unethical practices were exposed by several undercover journalists. Last year, in a Channel 4 documentary, an undercover journalist witnessed employees working over 120 hours a week while only being paid around USD 3-4 an hour (Head). Instead of addressing these unethical practices, Shein used this brand trip in an attempt to manipulate consumers. While some quickly realized Shein was trying to cover up their unethical practices, others believed these influencers and purchased from Shein. Shein knows that many customers feel a sense of social responsibility for the fast fashion industry, so they utilize marketing tactics such as this brand trip to manipulate consumers. Therefore, large-scale regulations are needed so that this kind of responsibility is not placed on the consumer.

Prototype of Europe's proposed "digital passports" for clothing

COMMITTEE JURISDICTION

Committee Objectives

The United Nations Environment Programme must meet to address the impact of the fast fashion industry on the environment. The four main objectives that this committee needs to address are as follows:
Technologies and methods that can be used to clean up existing clothing dumps
The clean up process for wastewater runoff, resource overconsumption, and other environmental impacts
The implementation of environmental regulations such as, but not limited to, a ban on dumping unsold clothes, a ban on unethical sourcing, etc
The use of punishments or subsidies to incentivize sustainable practices

Committee Jurisdiction

Fast fashion is a multifaceted issue, and other issues such as worker's rights and human health are intertwined with the fashion industry. Delegates can briefly discuss these issues, but keep in mind that the UNEP committee is focused on the environmental aspect of the issue. In addition, delegates should not focus too much on individual consumer actions, as this committee hopes to address the macro-level changes we can make to clean up the environment.

QUESTIONS TO CONSIDER

1. What is the economic role of the fast fashion industry in your country? Has the pandemic affected that role?

2. Much of the pollution from the fast fashion industry is dumped in developing countries. How can developed and developing countries work together to create infrastructure and regulations that clean up existing pollution and prevent further pollution? What technologies and methods can we use to clean up clothing landfills?

3. Some fast fashion companies engage in greenwashing in order to appear environmentally friendly. What can be done to combat greenwashing on an industry-wide level?

4. How can countries improve media literacy so that customers can respond appropriately to campaigns with greenwashing?

5. Why have governments failed to regulate and address fast fashion? Is economic growth compatible with environmental sustainability?

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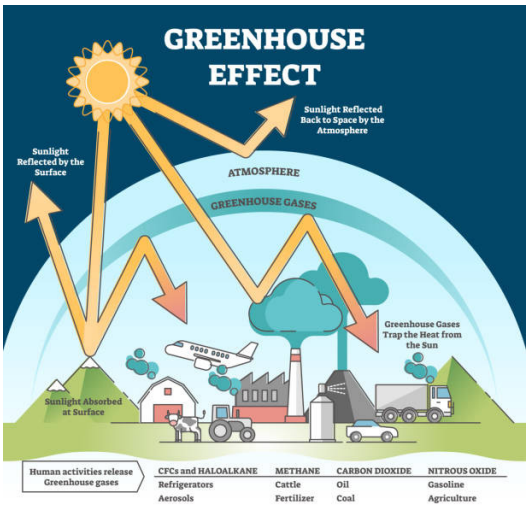
TOPIC B: USING GEOENGINEERING TO COMBAT CLIMATE CHANGE

TOPIC BACKGROUND

The average global temperature has risen more than 1.1°C since the Industrial Revolution ("World of Change: Global Temperatures"). This may seem inconsequential, but an increase in 1.1°C represents an enormous change because it takes an enormous amount of heat to warm the world's oceans, atmosphere, and land masses by that figure ("World of Change: Global Temperatures"). For comparison, a drop of one to two degrees plunged the Earth into the Little Ice Age, a period of unusual cooling in the Northern Hemisphere from 1303 to 1850 ("World of Change: Global Temperatures"). Today, global temperatures continue to rise at alarming rates. In July of 2023, the Earth reached the hottest day ever recorded four days in a row, with the hottest average global surface temperature reaching around 17.18°C (Paddison). For reference, during the 20th century, the average temperature for the month of July was 15.8 °C ("July 2023 Global Climate Report"). Experts in the scientific community are extremely concerned with these record breaking numbers, and some have proposed the use of large-scale climate interventions to slow the Earth's heating. If the Earth continues to warm at its current rate, policymakers may have to resort to geoengineering.

Geoengineering is a set of technologies that could be used to offset some of the negative effects of climate

change ("Geoengineering"). To understand how geoengineering works, one must first understand what causes global warming. First, the sun heats the Earth through solar radiation in the form of sunlight , around 30% of which is reflected back into space by reflective surfaces like clouds and ice, while the remaining 70% heats the Earth's land, oceans, and atmosphere (Riebeek). Life on Earth needs some of this absorbed sunlight to survive, but human activity has caused too much of this heat to be trapped within the atmosphere. Greenhouse gasses like carbon dioxide (CO_2) and methane stop some of the sun's rays from being reflected back into space, causing more heat to be trapped in the Earth's atmosphere ("The Greenhouse Effect"). Since the Industrial Revolution, atmospheric CO_2 levels have increased over 38% while methane levels have increased by 148% (Riebeek). These additional gases cause more heat to be trapped in the atmosphere, heating the Earth and causing a rise in global temperatures.



This diagram shows the Greenhouse Effect

Geoengineering attempts to reduce the warming effect of these trapped greenhouse gases. Much of geoengineering can be divided into two broad categories. The first of these is solar radiation management (SRM), also known as solar geoengineering. SRM cools the Earth by reflecting more sunlight back into space. Two technologies at the forefront of SRM are stratospheric aerosol injection and marine cloud brightening.

1. **<u>Stratospheric Aerosol Injection (SAI):</u>** This method involves injecting tiny reflective particles (sulfate aerosols) into the upper atmosphere, usually through a large balloon, to reflect more sunlight back into space ("What Is Solar Geoengineering?"). SAI mimics a large volcanic eruption, in that volcanic eruptions cause small particles to be released into the air, which then reflect solar radiation back into space, slowing the warming of the Earth ("What Is Solar Geoengineering?"). SAI uses reflective particles to create a similar effect.
    - **<u>Main SAI Knowledge Gaps/ Challenges:</u>**
        - Impact on future weather patterns — One criticism of SAI is that there is little research on how it might affect future weather patterns ("What Is Solar Geoengineering?"). Past volcanic eruptions may indicate how it affects regional weather patterns, but this is insufficient to understand the long-term impacts of sustained SAI ("What Is Solar Geoengineering?").
        - Interaction with other hazards — Scientists are also worried about SAI interacting with other hazards such as an extreme weather event, as it could potentially exacerbate extreme weather events and other hazards (Tang and Kemp).

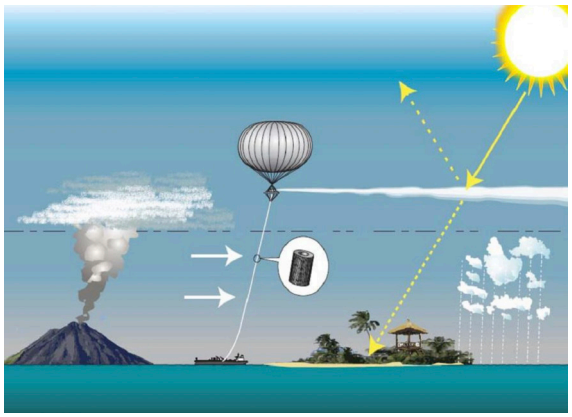


Diagram showing the SAI

1. **<u>Marine Cloud Brightening (MCB):</u>** This method involves spraying sea water particles into the atmosphere to create clouds that are able to reflect more sunlight back into space ("What Is Solar Geoengineering?"). Clouds are naturally formed when sea salt crystals, stirred up by winds from the ocean's surface, naturally attract and gather moisture, which rise into the atmosphere and form clouds ("What is Marine Cloud Brightening"). This technique leverages the fact that the number of sea salt crystals in the cloud determines how well it reflects the sun's rays ("What is Marine Cloud Brightening"). The spray is deployed using a sprayer attached to a barge which aerosolizes surrounding seawater to generate trillions of sea salt crystals, to seed clouds with high reflectivity ("What is Marine Cloud Brightening").
    - **<u>MCB Knowledge Gaps/ Challenges:</u>**
        - Signal detection — One existing knowledge gap exists in detecting whether MCB intervention is working as intended. Given the small signals resulting from marine cloud brightening, it may take years to decades for a statistically significant result (Diamond). This means that scientists may not know whether a MCB project is successful until years after a project has concluded.
        - Changing meteorological conditions — How susceptible clouds are to being brightened via MCB varies with local weather conditions, so it is essential that scientists quantify how meteorological conditions affect MCB effectiveness (Diamond). Clouds with the potential to be brightened must exist frequently and often enough that MCB can have a global effect (Diamond).
        - Impact on future weather patterns — Similar to SAI, potential large-scale weather pattern changes is a concern. MCB could lead to unintended consequences such as darkening clouds in other regions and affect precipitation patterns in regions already at risk to the effects of climate change such as the Amazon (Diamond).

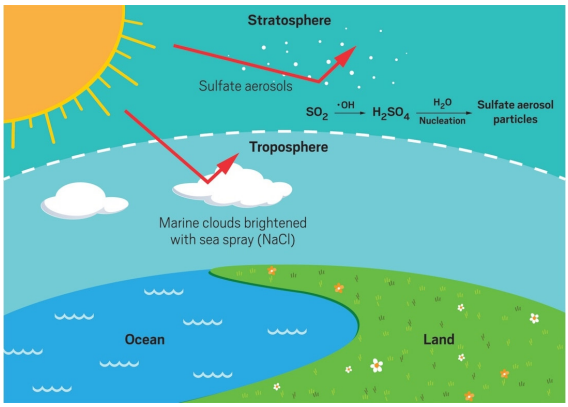


Diagram showing the MCB process

The second category of geoengineering we will focus on is carbon dioxide removal (CDR), or carbon geoengineering. Whereas SRM focuses on cooling the Earth by reflecting sunlight back into space, CDR

aims to offset CO_2 emissions by removing massive amounts of it from the atmosphere (Timperley). Similar to SRM, there are several methods scientists use. Two common methods are bioenergy with carbon capture and storage, and direct carbon capture:

1. **Bioenergy with Carbon Capture and Storage (BECCS)**: BECCS is a geoengineering technique that serves two purposes: (1) removing CO_2 from the atmosphere, and (2) generating energy (Vandermel). This process begins with growing biomass, such as in the form of a tree farm. The most common biomass used for this process is wood and compost (Vandermel). The biomass is then burned and converted to bioenergy, which is electricity, fuel, or heat (Vandermel). Burning biomass creates CO_2, which is then captured and stored underground in mountains, valleys, and other geological formations (Vandermel). Ideally, BECCS would be carbon negative since (1) biomass absorbs CO_2 from the atmosphere, (2) the burned biomass generates energy, and (3) the resulting CO_2 is captured and sequestered (Vandermel).
    - **BECCS Knowledge Gaps/ Challenges:**
        - Delay of urgent climate action — BECCS promises negative emissions, but it is unlikely it can be scaled up significantly to meet current climate targets (Vandermel). Polluters can use the promise of negative emissions to continue using fossil fuels, delaying necessary climate action (Vandermel).
        - BECCS requires huge amounts of land — A full-scale deployment of BECCS would require up to 40% of global cropland (Vandermel). To put this into perspective, half of the land in the United States would need to be cleared for BECCS use (Vandermel). This huge amount of land used could lead to biodiversity loss and food insecurity (Vandermel).
        - Unreliable storage — The Natural Resources Defense Council believes that BECCS is risky because CO_2 may not be properly stored underground (Vandermel).

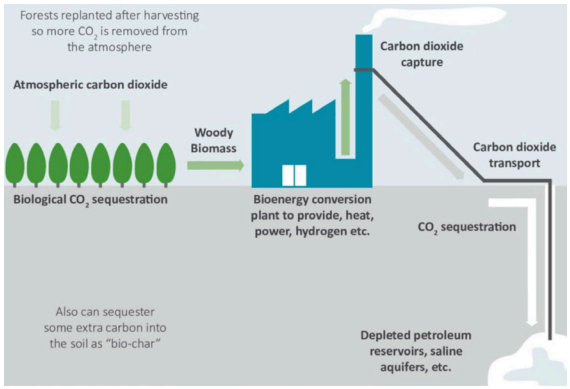


Diagram showing the BECCS process

1. **Direct Air Capture (DAC)**: According to the World Resources Institute, "direct air capture is a technology that uses chemical reactions to pull CO_2 out of air." There is a chemical filtration system set in place so that liquid solvents or sorbents selectively react with and trap CO_2 while letting other components of air pass through (Lebling). Once the CO_2 is captured, heat is applied to release it from the solvent or sorbent, regenerating the solvent or sorbent for another capture cycle (Lebling). This captured CO_2 is then injected deep underground into geological formations or used in other applications (Lebling). Most would be permanently stored underground, but some of this CO_2 can be used to create concrete, plastic, or jet fuel (Lebling).
    - **DAC Knowledge Gaps/ Challenges:**
        - Cost — DAC is the most expensive

CDR technology, costing between USD 250 and USD 600 per ton of CO_2 (Lebling). This is mainly due to a lack of government support and funding, and a dearth of DAC companies and projects (Lebling). Establishing more DAC projects could lower future costs by increasing the number of suppliers in the market and incentivizing innovation via competition (Lebling).

- Emissions — DAC uses massive amounts of power, but it is only able to capture a quarter of annual emissions at its maximum (Shelton-Thomas). The technology's high energy needs could potentially lead to more climate pollution than it can remove (Shelton-Thomas).

Currently, SRM and CDR technologies are only being tested in small-scale projects due to their various risks. While there are existing efforts to scale up certain projects, the scientific community is taking a cautious approach toward large-scale use of these technologies. In addition to the different criticisms from the scientific community for each individual technology, there is an overarching issue behind all of these technologies: they take a reactive approach to climate change. Geoengineering does not address the root problem, that humans emit overwhelming amounts of greenhouse gasses ("What Is Solar Geoengineering?"). It also poses an ethical issue, since it may encourage corporations to continue to produce high amounts of emissions. ("What Is Solar Geoengineering?"). Finally, geoengineering raises many geopolitical issues. The transboundary nature of geoengineering is complicated because large-scale projects could affect multiple nations ("What Is Solar Geoengineering?"). Because of these risks and uncertainties, geoengineering requires effective international governance.

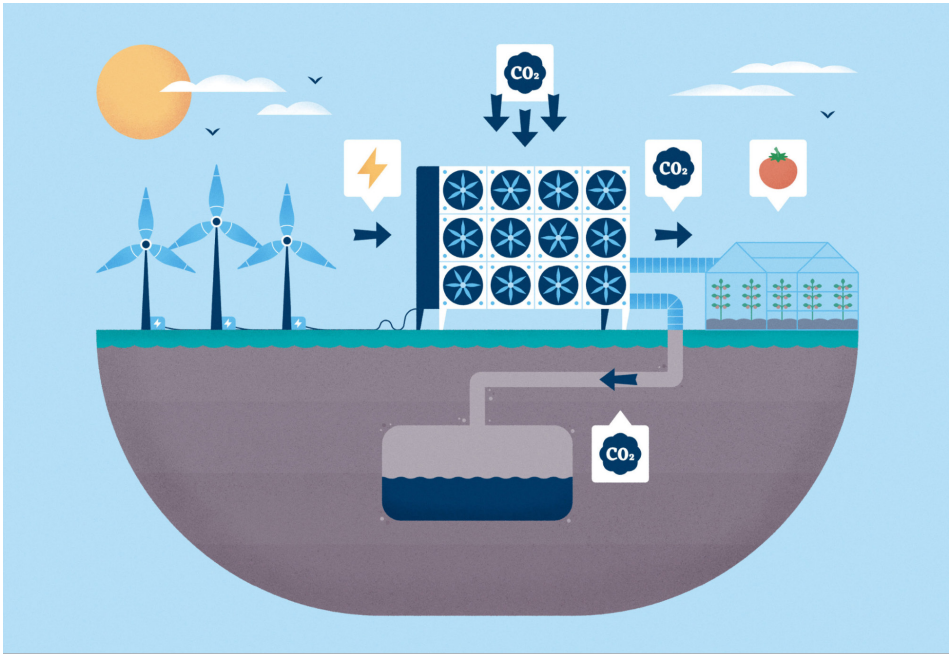


Diagram showing the DAC process

PAST UN ACTIONS

UN Convention on Biological Diversity

In 2010, the UN Convention on Biological Diversity published a moratorium on climate-related geoengineering projects and experiments (Pearce). 193 signatories agreed to ban geoengineering projects "until there [was] adequate scientific basis on which to justify such activities and appropriate consideration of the associated risks" (Pearce). Small-scale scientific research studies were exempt from this agreement ("UN Convention Still Says "No" To Manipulating the Climate").

The UN Convention on Biological Diversity met again in 2016 and reaffirmed their 2010 moratorium on geoengineering. The 2010 moratorium was revisited because of the 2015 Paris Climate Agreement, an international treaty where countries agreed to limit global temperature increases to 1.5°C above pre-industrial levels ("UN Convention Still Says "No" To Manipulating the Climate"). Some geoengineers interpreted the Paris Climate Agreement as allowing or encouraging geoengineering to meet this goal. Geoengineers received heavy backlash from the scientific community, with the Latin American Director of ETC Group stating, "The decision to reaffirm the global moratorium on geoengineering is an important message for those who are promoting it as a shortcut to achieve the Paris Agreement goals" ("UN Convention Still Says "No" To Manipulating the Climate"). Many scientists agree that humans need to address the root causes of climate change instead of using "shortcuts" such as geoengineering.

Past Resolutions

In 2019, Switzerland submitted a resolution to the United Nations Environment Assembly (General Assembly) on "Geoengineering and its Governance." This resolution was supported by Burkina Faso, the Federated States of Micronesia, Georgia, Liechtenstein, Mali, Mexico, Montenegro, the Republic of Korea, and Senegal ("Geoengineering and its Governance). Other European nations urged for even stronger language in the resolution. In the preambulatory clauses, Switzerland stated that they were deeply concerned with the potential risks of geoengineering, as there was a lack of control and oversight in this area ("Geoengineering and its Governance"). They further revealed in the operative clauses that they hoped the UN would conduct an analysis of the implications of geoengineering, and based on this analysis, provide further guidance on geoengineering exploration ("Geoengineering and its Governance). This resolution was ultimately blocked by three key countries: the United States, Saudi Arabia, and Brazil (Chemnick). The United States in particular insisted that questions about geoengineering be left to the Intergovernmental Panel on Climate Change because of their ability to conduct more thorough research on the issue (IPCC) (Chemnick). Environmentalists across the globe were disappointed that this resolution failed due to the continued lack of governance on the use of geoengineering.

UN Statements

No UN resolutions on geoengineering have been introduced since, but the UN has made a few statements about the technology. In February of 2023, the UNEP convened a panel of experts to review the current state of scientific research on solar geoengi-

neering ("One Atmosphere: An Independent Expert Review on Solar Radiation Modification Research and Deployment"). In the UNEP report, the group of experts recommended four priority actions:

1. A review process for solar geoengineering that evaluates its risks and benefits
2. A governance framework for both small-scale experiments and large-scale deployments
3. Placing solar geoengineering within the broader category of atmospheric governance
4. Ensuring the conversation around solar geoengineering is globally inclusive

It is important to note, however, that many scientists across the planet say it should be explored as a supplement, rather than the main plan to combat greenhouse gas emissions ("Climate Engineering Is Risky, but Should Be Explored, Experts Say at UN Conference").

International Panel on Climate Change (IPCC)

The IPCC is an intergovernmental body created by the United Nations Environment Programme and the World Meteorological Organization in 1988 to conduct regular scientific assessments on climate change ("About the IPCC"). The IPCC releases an annual report on the latest research on climate change, with their first mention of geoengineering appearing in 2013 (Cressy). They stated, "Methods that aim to deliberately alter the climate system to counter climate change, termed geoengineering, have been proposed. Limited evidence precludes a comprehensive quantitative assessment of both Solar Radiation Management (SRM) and Carbon Dioxide Removal (CDR) and their impact on the climate system" (Cressy). Although this mention in the IPCC's report is reflective of the growing international interest in geoengineering at the time, geoengineering has been conspicuously absent from the annual IPCC reports released since then.

The only regulatory recommendations the IPCC has issued about geoengineering came in 2011 when a group of experts met to discuss potential regulations. They stated that geoengineering technologies need to be evaluated using the following criteria: effectiveness, feasibility, scalability, sustainability, environmental risks, affordability, governance challenges, ethical issues, and uncertainty ("IPCC Expert Meeting on Geoengineering"). This group's discussion on solar geoengineering was limited due to the fact that current literature on solar geoengineering techniques was based on limited theoretical and modeling studies, with very little empirical data ("IPCC Expert Meeting on Geoengineering"). Specifically, they were worried about the unintended consequences solar geoengineering might have on weather, grasslands, and oceans. They postulated that the technology was unlikely to impact weather patterns ("IPCC Expert Meeting on Geoengineering"). However, they stated that it may have negative environmental impacts on deserts and plant ecosystems. They also stated the reduction of light in lower ocean levels could impact marine ecosystems ("IPCC Expert Meeting on Geoengineering"). The group of experts expressed similar concerns about the uncertainty surrounding carbon geoengineering. Since the relationship between scale of deployment and scale of impact for carbon geoengineering is not well understood, the panel was especially concerned with. longevity and sustainability. Questions this committee had included: "What fraction of the removed carbon will return back to the atmosphere? How costly is this when deployed on a large scale?" ("IPCC Expert Meeting on Geoengineering"). Experts and UN officials alike are cautious about using geoengineering, but they agree that this is a path researchers should continue to look into.

GEOENGINEERING PROJECTS

Harvard's SCoPEx (SAI) Project

Harvard's Stratospheric Controlled Perturbation Experiment (SCoPEx) is a project in Sweden undertaken in the hope of clarifying some of the possible risks and benefits of stratospheric aerosol injection (SAI) (Burrows). The SCoPEx project is a small-scale outdoor experiment where data is collected in a controlled environment (Burrows). The experiment has been kept sufficiently small so that it does not pose a threat to humans or the environment. Conducting this experiment outdoors is important because it allows scientists to measure the effect of other environmental factors such as the wind (Burrows). In order to test the effectiveness of solar geoengineering, they have used the following methods (Burrows):

1. Researchers fit a scientific balloon with propellers and release it into the atmosphere.
2. They then release a very small amount (100g-2kg) of calcium carbonate into the air mass mixed by the propellers.
3. The balloon then measures the resulting changes in aerosol density, atmospheric chemistry, and light scattering.
4. Scientists analyze this data to determine the potential impacts of solar geoengineering.

Image of Harvard's SAI project

Scientists ultimately found that the unintended side effects of stratospheric aerosol injection appeared to be minimal. They reached this conclusion by analyzing how calcium carbonate reacted with the ozone layer. The ozone layer is a thin part of Earth's atmosphere that absorbs the vast majority of harmful ultraviolet rays (Burrows). This layer is thinning due to human activity (Burrows). It was previously thought that the injection of certain chemicals like sulfate could further damage the ozone layer (Burrows). In this study, scientists tested calcium carbonate instead to see how it would react. Surprisingly, calcium carbonate ended up being less reactive than scientists predicted. This means that the unintended side effects of injecting calcium carbonate into the atmosphere could be small (Burrows). The surprising result shows that computer models are not very effective in predicting the benefits and risks of solar geoengineering. This is because there are too many environmental factors involved for computer models to accurately predict results, which is why small-scale outdoor experiments are important (Burrows).

Southern Cross University's Marine Cloud Brightening (MCB) Project

The Great Barrier Reef is the largest coral reef system in the world, and has been severely damaged by coral bleaching caused by climate change. Climate change causes ocean waters to warm, and when the water is too warm, corals expel the algae with which they have a symbiotic relationship ("Everything You Need to Know about Coral Reef Bleaching"). Corals get their distinctive colors from algae, so when these algae leave, the coral fades until it looks like it has been bleached ("Everything You Need to Know about

Coral Reef Bleaching"). Bleached corals are not dead, but they are more at risk of starvation and disease ("Everything You Need to Know about Coral Reef Bleaching").

Researchers at Southern Cross University are experimenting with marine cloud brightening (MCB) technology to combat coral bleaching ("Change in the Clouds"). In 2020, Dr. Daniel Harrison and his team led their first outdoor trial ("Change in the Clouds"). They used a sea water spray to pump seawater droplets above the ocean ("Taking to the Skies to Shade Coral"). They then utilized drone technology linked to a sampling vessel to show that sea salt crystals can bolster the reflectivity of existing clouds ("Change in the Clouds"). More recently, they completed a second trial where they gathered data on the behavior of the atmosphere over the Great Barrier Reef during the summer months when corals are most at risk of bleaching ("Taking to the Skies to Shade Coral"). They also mapped the movement of the sea salt sprayer to better understand where it should be aimed for the best reflectivity ("Taking to the Skies to Shade Coral"). This project is still ongoing, but Dr. Daniel Harrison says that MCB has the "potential to protect the entire Great Barrier Reef from coral bleaching in a relatively cost-effective way" ("Taking to the Skies to Shade Coral").

Southern Cross University's MCB sea water spray pump

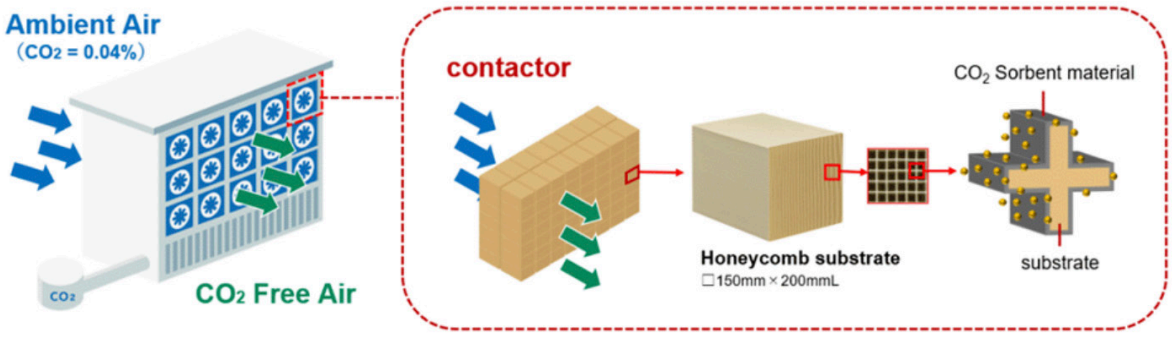
Illinois Basin-Decatur Project (BECCS)

The Basin-Decatur Project is a bioenergy with carbon capture and storage (BECCS) project at Archer Daniels Midland Company's corn processing plant in Decatur, Illinois (Vandermel). At this plant, workers grind corn into syrups, sweeteners, ethanol fuel, and other products (Yeo and Pearce). While doing so, this company captures CO_2 emissions from its ethanol plant to trap it in a layer of sandstone that lies beneath the Illinois corn belt (Yeo and Pearce). They capture the emissions released by fermenting corn, which absorbs CO_2 when it grows (Yeo and Pearce). During its pilot project, which took place between 2011 and 2014, they were able to inject 1,000 tons of CO_2 per day into the Mount Simon sandstone deposit (Yeo and Pearce). The Mount Simon sandstone deposit is an ideal place for storage because it is very porous (Yeo and Pearce). CO_2 can be stored in tiny holes in the rock, and there are little risks of this CO_2 leaking because it lies beneath three layers of dense shale (Yeo and Pearce).

Japan's Direct Air Capture (DAC) Project

In January of 2023, a Japanese company called NGK Insulators announced its plan to use direct air capture (DAC) technologies to capture between 6 and 12 metric tons of CO_2 per year by 2030 (Budinis). NGK Insulators is known for their honeycomb structured ceramics, and a specialist in ceramic honeycomb structures discovered that they can be used for DAC ("New Technology to Capture CO2 from Air Set for Japan Trials"). This honeycomb structure is called Honeyceram, and it is a ceramic catalyst mainly used in vehicles to clean auto emissions ("New Technology to Capture CO2 from Air Set for Japan Trials").

Their DAC process begins with fans pushing air through Honeyceram blocks ("New Technology to Capture CO2 from Air Set for Japan Trials"). Their honeycomb structure is coated with a sorbent that reacts with and traps CO_2 ("New Technology to Capture CO2 from Air Set for Japan Trials"). NGK Insulators claims that their Honeyceram technology is more efficient than others on the market because its honeycomb structure provides more surface area for contact between the material and air, letting it trap CO_2 more efficiently ("New Technology to Capture CO2 from Air Set for Japan Trials"). The initial testing stages for this project are set for 2025 ("New Technology to Capture CO2 from Air Set for Japan Trials"). While the company has high hopes for DAC, cost remains a huge barrier, with projections showing that it would cost USD 300–600 per ton of CO_2 ("New Technology to Capture CO2 from Air Set for Japan Trials").



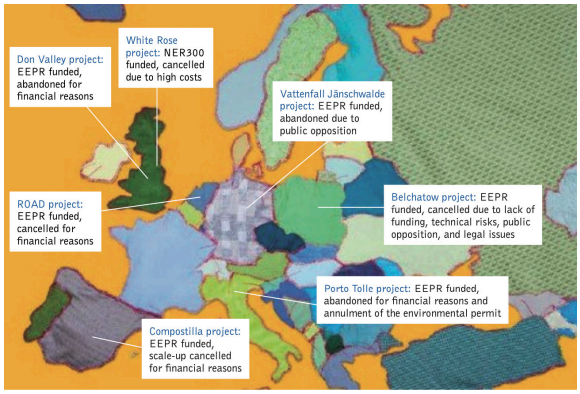
Prototype of DAC Project

CASE STUDIES: PUBLIC POLICY CHALLENGES

Europe's Failed Geoengineering Projects

Europe has become a hotspot for CDR research and exploration, with the European Union (EU) granting increased funding toward geoengineering research projects in recent years. In 2019, the EU passed the European Green Deal, a set of policy initiatives that seeks to make the EU climate neutral (net zero emissions) by 2050 (Chalmin). The European Green Deal mentioned CDR as a possible means to reduce global warming, stating that they hope to introduce these "breakthrough technologies" by 2030 (Chalmin). In total, EUR 424 million was given to support these projects (Chalmin). However, the EU has failed to meet their own targets for testing CDR. The European Council originally committed to testing the viability of carbon capture and storage via twelve large-scale projects (Chalmin). However, only seven of these projects were actually planned and none

were implemented, with all of them ultimately being abandoned due to financial issues (Chalmin). The EU still wishes to continue pushing forward with future projects. They stated that although these initial projects failed, they still consider CDR a key tool for decarbonization (Chalmin).



One such failed project was the "White Rose" carbon removal project in the United Kingdom. Drax, the developer, promised to use BECCS to produce "clean coal" and thus negative emissions (Munnion). They stated that 90% of emitted carbon would be captured and stored safely under the North Sea (Munnion). The United Kingdom awarded Drax a multi-million pound contract for the design and planning of this project, but it failed and was eventually abandoned due to a lack of funding.

There were also problems with the BECCS technology. Drax made promises of negative emissions, but in reality, emissions are still positive. It was found that even with the optimistic 90% capture rate, the plant would still be increasing emissions (Munnion). Scientists also determined that this project could have caused further deforestation, soil depletion, and pollution, as this project would have required increased wood imports from the global south (Munnion). Drax entered a sourcing agreement with a Brazilian company to build a large pellet plant, which would have led to the displacement of indigenous and traditional communities and deforestation (Munnion).

Impact of Public Opinion on Harvard's SCoPEx Project

Public opinion can have a heavy impact on the continuation of geoengineering projects. Harvard's SCoPEx project (refer to Geoengineering Projects section), for example, is currently being challenged by the Indigenous Saami people of Northern Sweden (Dunleavy). Members of the Saami Council objected to Harvard's experiment, as they wanted to consult with researchers about the possible unintended consequences of these experiments (Dunleavy). As a result, the balloon test was suspended until further discussion between research agencies and the Saami Council (Dunleavy). Researchers and the Council remain at a stalemate today, as the groups have not been able to find a compromise (Dunleavy). Indigenous communities are often not consulted on research on their lands until after the project has begun, and this lack of trust between the groups has further delayed negotiations (Dunleavy).

The controversy with the SCoPEx project is reflective of the broader issue behind geoengineering: should scientists continue to test geoengineering even though it poses ethical and physical risks (Dunleavy)? Geoengineering projects need public support in order to continue, but many are hesitant to support such topics due to its risks. SCoPEx researchers tried to gain this public support by inviting public opinion and guidance, both globally and locally in Sweden (Dunleavy). However, without the support of the Saami Council, this project is unlikely to resume.

COMMITTEE JURISDICTION

Committee Objectives

Geoengineering and its risks and benefits is a rising issue in the environmental sector. With so much uncertainty about its possible use, the United Nations Environmental Programme must meet to address the governance of such technology. Specifically, we need to address the following issues:

1. The knowledge gaps surrounding geoengineering technologies
2. The need for governance and advisory on the use of geoengineering
3. The ethical issues geoengineering poses

Committee Jurisdiction

The transboundary nature of geoengineering puts both member states and the UNEP in an interesting position. Large-scale geoengineering is not just a multi-country or multi-region endeavor. Its impacts could affect the entire globe. Thus, there are many questions about land/air rights as well as whether it is ethical for a country to participate in activities that could change the global climate. Delegates can briefly mention these geopolitical issues, but it should not be a main point of discussion.

QUESTIONS TO CONSIDER

1. Does your country have any successful geoengineering projects? Failed projects? Are there any geoengineering technologies your country uses that are not mentioned in this paper?

2. What are the ethical implications to using geoengineering now? To what extent should it be viewed as a last-resort option for the future?

3. Large-scale geoengineering projects have the potential to infringe on national boundaries. How do we set transnational boundaries for geoengineering for large-scale geoengineering projects?

4. Geoengineering research is an expensive endeavor, which is why research hotspots mostly lie in developed countries. Thus, to what extent is the future of geoengineering and its implementation controlled by developed countries? What can countries do to ensure that funding is not a barrier to further exploration?

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