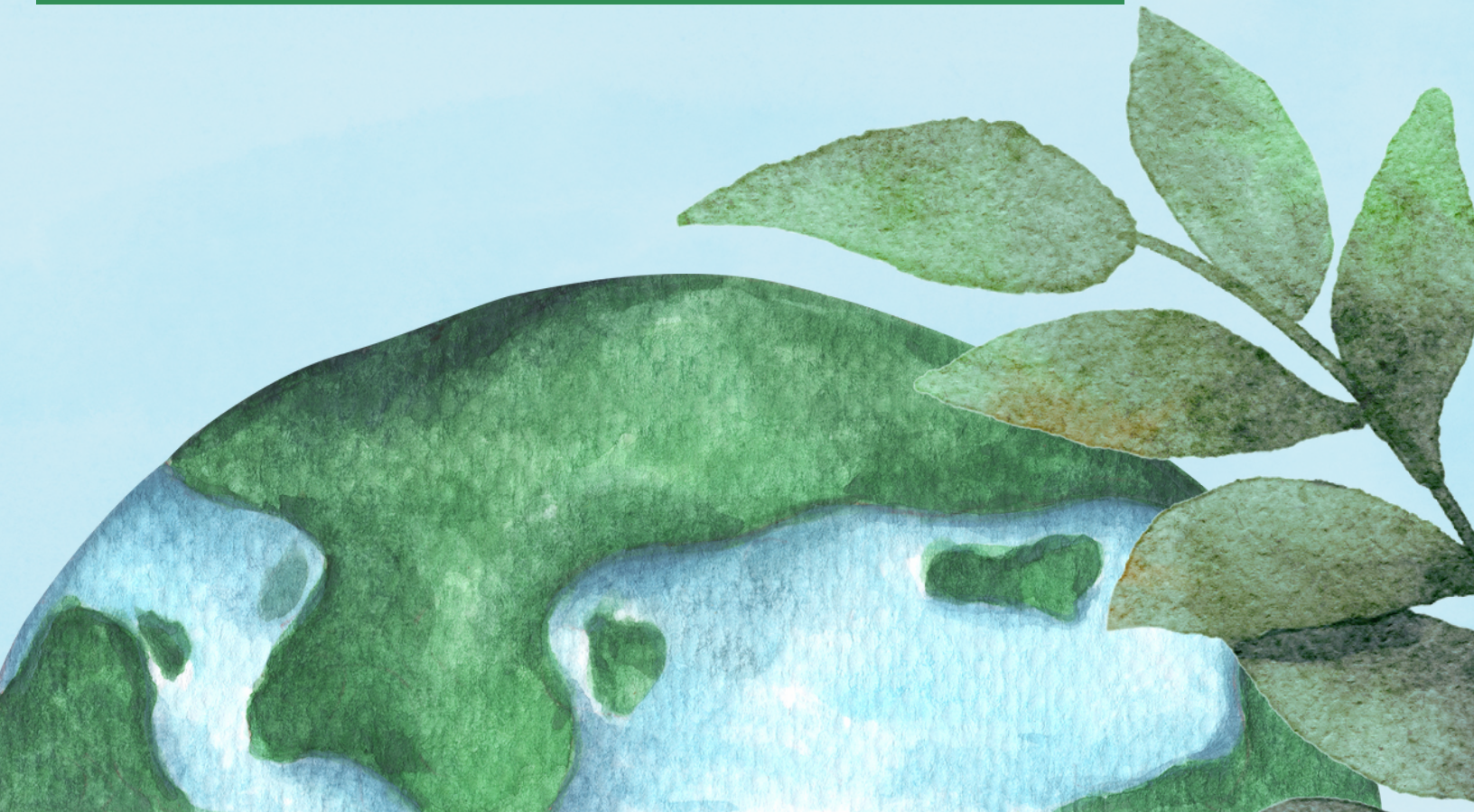


CURA TERRA

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Cura Terra

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Cura Terra

About Us

History

Cura Terra is the Georgetown University Environmental Studies Department’s Undergraduate Journal. Previously, a version of this journal, titled Georgetown Undergraduate Journal of the Environment (GUJOE), ran in print from 1997-2007. In 2020, under the charge of Randall Amster, 12 undergraduates revived this project, giving it a new name and form. It is a multidisciplinary endeavor, aimed at increasing the accessibility and awareness of environmental issues and their everyday impact on students' lives.

Mission & Values

The environment is personal. Environmental studies does not exist only in a theoretical or academic space; it is intertwined into the lives of every person on this planet. At *Cura Terra*, the personal forms the beating heart of our work. We are an undergraduate journal founded on values of justice and equity, putting people at the center of the world’s most pressing environmental issues. *Cura Terra* is designed to be both interdisciplinary and intersectional, because we believe that there is no single perspective that can adequately capture the totality of any environmental issue. To this end, we strive to demystify academia and to be accessible to academics and students alike; our content balances rigorous academic research with insightful journalistic and creative content. Above all, *Cura Terra* exists to galvanize action. Through asking difficult questions of our readers, we balance the urgency of the present with hope for the future, underlining the vital role we each must play moving forward.

Editorial Staff (Fall 2021-Spring 2022)

Faculty Director..... Randall Amster

Executive Directors..... Ursula Gately & Ruhie Rapolu

Editors at Large..... James Pocchia, Miray Samuel, & Alison McLeod

(Cover art by Ursula Gately with Canva)

Cura Terra

Letter from the Editors

We are very excited to present the third edition of *Cura Terra*. In this edition, we elevate the work of students from both our community and others with a focus on investigating environmental issues and advocating for change. Students are a beacon of hope within the environmental movement, as they indicate the passion and drive of the next generation.

Rowlie Flores' "Meaning, Struggle, and the Future of Decolonization: Lessons from the Water Movements in The Dakotas" examines the connections between an indigenous perspective on water rights and the protest movements against the Dakota Access and Keystone XL pipelines. By exploring concepts such as place-based value and the contradictions in prior appropriation, Flores illustrates the ways in which indigenous ties to nature have been disrespected and how their message is effectively communicated and drives mobilization. Flores asserts how focusing on these two protest movements provides a framework for the indigenous politics of water that can be used for future mobilization efforts. Flores graduated from Georgetown University in 2022 and is currently pursuing a law degree at Tulane University.

Jenny Zhang's "The Incompatibility Between Business and Sustainability: Why Clothing Companies Greenwash" focuses on the difficulties of pursuing sustainable practices in the fashion industry. Specifically, she focuses on Inditex, Kerling, and Patagonia and compares their consumption, practices, and level of transparency. Demonstrating the challenge of balancing profitability with sustainability, she explains how increasing sales makes it challenging to minimize corporations' environmental impact. Zhang explores different solutions to facilitate the fashion industry's transition towards sustainability, including co-creation, circular fashion, and government participation. Although these measures are insufficient to entirely reverse the harm caused by the industry, they represent a significant stride towards achieving that goal.

"Co-Benefits of Energy Transition in U.S. Marginalized Communities" by John Hopkins University student Greta Maras reveals how the ever-burgeoning effects of climate change — chiefly driven by carbon dioxide emissions — disproportionately impact members of marginalized communities in the U.S. Maras first discusses how different sources of air pollution have been degrading air quality, resulting in health burdens that have the most severe effects, including increases in the risks of childhood asthma and extreme temperature-related deaths, upon marginalized and underserved communities. She then explores plans for energy transition and environmental justice that can be used to save money and lives, especially in marginalized communities, through a variety of case studies from New York and California.

“The Indigenous People of Virunga National Park: at the Crossroads of Civil War, Green Militarization, and Civilian Agency” by Fenja Tramsen of Swarthmore University is a piece that explores the effects of harmful conservation practices and green militarism on Indigenous communities. By specifically focusing on the fortress conservation conducted by armed park rangers in the Virunga National Park of the Democratic Republic of the Congo, Tramsen demonstrates the importance of civilian agency in conservation and tourism efforts. This is especially necessary for the Indigenous communities who rely on the park for various aspects of daily life. Tramsen provides interesting alternatives and suggestions for adapting the conservation efforts in order to better reflect the needs of surrounding communities, park rangers, and wildlife.

Finally, Cura Terra would like to thank Randall Amster for his continued support through the Environmental Studies department and congratulate long-term board member Ursula Gately on her graduation. We are so proud of you, and we wish you the best of luck in your new beginnings.

Signed,

Ursula Gately, Ruhie Rapolu, Alison McLeod, James Pocchia, & Miray Samuel

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Meaning, Struggle, and the Future of Decolonization: Lessons from the Water Movements in the Dakotas

Rowlie John Flores

Academic Editor: Alison McLeod

Institution: Georgetown University

Abstract: Since the beginning of time, Indigenous peoples have always fostered a personal relationship with nature. This paper starts by summarizing the different ways in which Indigenous people have honored their natural surroundings, more specifically, their water resources. In many Indigenous cultures, water is viewed as a sentient, living being honing enough power to affect the livelihoods of those who rely in its existence. Seeing water as a provider of resources and life, a mutual respect is formed between water bodies and human communities. The concept of water as a common resource is prevalent in many Indigenous cultures and along this view comes the shared responsibility of protecting and preserving water bodies for present and future use.

These perspectives on water claim creates a challenge in the contemporary world where neoliberal institutions threaten the well-being of Indigenous land and waters through the doctrine of prior appropriation prevalent under the frameworks of capitalism. Using case studies from the Dakota Access Pipeline and Keystone XL Pipeline water protests, this paper analyzes the ways differing views on water access and rights has affected the Indigenous movement's demand for recognition of their claims to water bodies and political representation. Moreover, this research explores the different ways the Sioux tribe has built solidarity with other Indigenous groups and movements outside of Indigenous circles; in other words, how has the Sioux tribe shaped water issues as a universal issue and not one pertaining to only to their culture and way of life..

Indigenous Ties to Nature

Spiritual Claims to Water and Tribal Ethics

One of the most important aspects to keep in mind about Indigenous water politics is that water is often seen as a sentient being, or having a life of its own. To illustrate, societies in Southeast Asia have used the movement of the Mekong River as a temporal scale meant to measure when fish harvest is at its peak. They do this by looking at the rise and fall of the river's water levels, which mark when fishing and riverbed farming would be the most productive (Johnson, 2019). Thus, for the ethnic groups living along the Mekong River, the river is viewed to have a life of its own that controls the different facets of their everyday life. As a result, a harvesting festival was created in honor of the river.

However, the construction of a Chinese dam changed the flow of the river, threatening the livelihood of surrounding communities. This affected the fishing and farming of the communities along the Mekong, but Johnson argues that the “river beings remain, but they, in turn, are subject to the new Mekong.” By this, the people of the Mekong still see the river as sentient, but now it is the dam controller that gives it its movement. This human-to-nature relationship prevalent in the Mekong depicts a strong desire to explain the unknown and that is why nature and water are both seen as sentient by those who experience first-hand how the river has affected their livelihood. This is to also show that cultural beliefs around nature persist and that people will learn new knowledge and shift their culture into adopting new ways of praise and traditions if doing so aids them in understanding how the world around them functions.

Communitarianism and Views on Ownership

In most Indigenous literature, water is labeled as a necessity for survival because food security was dependent on one’s access to water resources. Thus, water was seen as a common resource accessible to everyone, but it also entailed shared responsibilities to maintain the resource among those who use it. During the 1800s, prior to the annexation by the United States, Native Hawaiians relied on a land division system called an ahupua’a, which through irrigation ditches, brought water from the mountain down to fields of native farmers (Maclennan, 2007). In addition to having a shared resource of water, Native Hawaiians shaped their culture around their access to water.

For instance, farmers could lose their access to water if they did not maintain their fields or participate in their share of repairing the ditches. Access to water was also managed by a chief who allocated water rights using a specified time schedule based on need, emphasizing the necessity for a controlled consumption of water resources and using only what was required to grow their crops. In addition to the timed collection of water from the streams, Maclennan also writes that Native Hawaiians were not permitted to divert more than half of the flow from the stream. This demonstrates that seeing water as a common good not only affirms the need for a shared responsibility, but it depicts that Native Hawaiians were aware that water was a limited resource that was to be shared by everyone and not hoarded by a certain group or body.

However, this traditional outlook on water claim is often contrasted by the doctrine of prior appropriation, which sees water as a commodity instead of a shared resource. An example of how the concept of prior appropriation conflicts with place-based value that is prevalent in many native communities is the case-study of the acequia farmers in New Mexico. Here, the acequias refer to a type of irrigation ditches that utilizes melting snowpacks in the summer months as its main source of water for agriculture (Peña, 2002). Despite its efficiency in providing water to the local community, prior appropriation treats surface water as a commodity that can be separated from the land and sold to other users (Peña, 2005). This outlook on water claim presents the idea that whoever uses the water first has the first claim to its right, which poses the ultimate question: can water be owned?

The acequia farmers in New Mexico and Native Hawaiians share a common understanding of water that it can’t. In fact, acequia customary principles, which dates to 1592, includes five principles: the communitarian value of water, the non-transferability of water, the right of thirst, shared scarcity, and cooperative labor and mutual aid in caring for the acequias (Amster, 2013). Regardless of the precedent of these principles, the acequias are being affected by logging

operations that have delayed the runoff of water into these ditches (Peña, 2002). Neoliberal institutions have failed to protect these ditches because recognizing the place-based value of natural resources does not yield them any profit. Unlike the limits Indigenous people place in their consumption of water resources, these limits simply do not exist in capitalism and this lack of limits threatens not only the water availability but the livelihood of all those who depend on it.

State Relationships

Looking back to the World Water Forum in Japan in 2003, Indigenous delegates from Canada and Bolivia agreed that governments often would claim that development in Indigenous lands was planned diligently and that Indigenous groups in the area were consulted in the process (Sam & Armstrong, 2013). However, the delegates added that *consultation* presumes government possession and that the word should be left out of the Indigenous declaration. By recognizing that the word consultation insinuates state ownership of water resources, these delegates are asserting that these consultations don't go nearly far enough. To them, consultation is simply a recommendation that Indigenous leaders provide the government, but the government still reserves the right to follow—or disregard—these recommendations at their discretion. The ultimate goal of these delegates is political representation, which this paper attempts to capture.

However, doing so requires looking at the different ways in which Indigenous groups have appreciated water. Otherwise, it would be easy to see a repetition of the Cochabamba water protests where the privatization of water led to the loss of individualism among Indigenous people to the point that people were legally not allowed to collect rainwater or utilize wells in their own property if they were not paying for it (Olivera & Lewis, 2008). Thus, further corroborating the power that neoliberal institutions have over Indigenous peoples since the company that controls the water in Cochabamba could cap these wells even if they are located in people's homes. Furthermore, the decision to transition into the privatization of water fell into the hands of the state, which means that Cochabamba residents were forced to seek solutions beyond the state, leading to the water wars that Olivera and Lewis write about.

In environmental justice theory, scholars see that “social inequalities are deeply embedded in society and reinforced by state power, and therefore the current social order stands as a fundamental obstacle to social and environmental justice” (Pellow, 2018). Radical solutions for the Indigenous movement are needed because the current social order that is embedded in society will continue to disregard the water relationships that Indigenous peoples hold dear. Decolonization cannot presently exist under the frameworks of capitalism, so in this paper, I argue that liberation and sovereignty are the end goals of the Indigenous movement and only then can the innate value of water—and with it, the values of nature and the environment—be recognized.

Case Studies

The Dakota Access Pipeline

The Dakota Access Pipeline refers to a pipeline intended to carry oil 1172 miles from the Bakken oil field in North Dakota to existing pipeline infrastructure in Patoka, Illinois, but resulted in years of water protests over how the project will affect Indigenous waters (Mengden IV, 2017). The pipeline was thought to threaten the Standing Rock Tribe's water supply in the Missouri

River and disrupt sacred lands, which led to the tribe suing the U.S. Army Corps of Engineers. However, the U.S. Circuit Court in the District of Columbia voted against the tribe and thought that the Corps followed the appropriate procedures (Mengden IV, 2017). Regardless, the lawsuit was seen as a victory by some parties because it was able to provide tribal groups with some media coverage that helped these tribal nations form alliances in their fight to stop the pipeline from being constructed.

However, some of these alliances depended on the labor of tribal nations and their intentions are often selfish in nature. For instance, some “environmental groups perpetuate exploitation of tribes when they engage them simply to further the environmental agenda without giving due attention to relevant tribal issues” (Mengden IV, 2017). This manipulation stems from the fact that environmental activism has a lot of overlap with Indigenous movements due to the degree of respect that Indigenous groups have on their lands, but with this, it is important to recognize that not all Indigenous issues are related to the environment. Future battles on water claims and pipelines should ensure a proper screening of allies. This means that while allyships are crucial to the success of the Indigenous movement, these allies must also have their whole heart in the movement and not only parts of it that benefit their own platforms.

Nevertheless, this is not to say that there aren't good allies to these Indigenous nations. These new allies saw how the water protests changed its discourse from protesters to protectors very quickly. Social media helped with the dissemination of graphic pictures and videos that prompted mobilization. In these protests, “the use of pepper spray, attack dogs, tear gas, and water cannons on water protectors in under-freezing temperatures garnered extensive media coverage and, indeed, signaled a crisis of democracy to a growing international audience” (Deem, 2019). Ironically, these videos and coverage were provided by a tech company hired by the energy company looking to gain information on the protesters. This change in discourse and portrayal of the water protests shaped the context around the oppressor versus the oppressed. By making the energy company look bad and exploitative, the media coverage helped the Sioux tribes gain some non-Indigenous activists that turned the movement into an international movement.

To Indigenous people, especially the Sioux tribes in South Dakota, the construction of the Dakota Access Pipeline is a clear example of modern-day settler colonialism. This refers to the “complex social processes in which at least one society seeks to move permanently onto the terrestrial, aquatic, and aerial places lived in by one or more societies who already derive economic and cultural vitality from the area as well as get from political self-determination from the flora, fauna, and resources that are found there” (Powys-Whyte, 2017). This ties back to the concept of place-based value of nature that was discussed earlier. Settler colonialism is about the loss of land that the Sioux had depended on, hence the #NoDAPL movement is not only a question of water protection but also that of the Indigenous movement.

The movement highlights the sad truth that consultation in these projects even after suing the U.S. Army Corps of Engineers did not take Indigenous groups far. Instead, the Sioux tribe requires political representation by being provided with voting privileges in consultation boards that they are invited to (Mengden IV, 2017). Providing Indigenous leaders a voting privilege in this process also entails the question of how many leaders should be included in these discussions. A committee that includes only a few Indigenous leaders could mean that officials with ties to neoliberal institutions could outvote Indigenous concerns, but just the right number

of Indigenous leaders in these talks can only lead to a possibility of projects being delayed from a tie vote.

In the United States, federal agencies are mandated by the National Environmental Policy Act (NEPA), which requires agencies – this being the U.S. Army Corps – to assess the environmental impact of their projects. The Standing Rock Tribe argued that NEPA should have been applied to the entire pipeline project prior to issuing any of the Nationwide Permits to Dakota Access instead of simply using the Nationwide Permit 12 process, which made the pipeline exempt from environmental assessments (Wolfley, 2018). For a project as large as the Dakota Access Pipeline, the tribe earned some partial victory. On June 2017, the courts found that the “Corps failed to adequately consider under NEPA the impacts of an oil spill on the Standing Rock Sioux Tribe’s treaty hunting and fishing rights, the environmental justice implications of the pipeline, and the degree to which the DAPL’s effects are likely to be highly controversial” (Wolfley, 2018). While this was months after President Trump released a presidential memorandum approving the pipeline in its original path, the Dakota Access Pipeline water protests demonstrated several lessons that can be taken into consideration in future battles for water rights.

For instance, in their litigation case against the U.S. Army Corps of Engineers, the court cited the Supreme Court case, *United States v. Winans*, where in this case, it was determined hunting, fishing, and gathering rights were vital to tribal life (Wolfley, 2018). The Winans case is crucial for the Indigenous movement because the Court said that these activities “were not much less necessary to the existence of the Indians than the atmosphere they breathed.” Therefore, Native Americans had access to land that were privately owned for the purposes of the rights of fishing, hunting, and gathering given to them under the Fort Laramie Treaty. In sum, by posing their campaign around these reserved rights, the Sioux tribes had a case for the protection of water resources. Due to the court’s opinion, it would be strange to imagine the existence of the pipeline if President Trump had lost the election in 2016.

The Keystone XL Pipeline:

Unlike the Dakota Access Pipeline, the construction of the Keystone XL Pipeline was more complex because it needed to go through a presidential permitting process because parts of the pipeline are being built in Canada and is not entirely in the territory of the United States (Mengden IV, 2017). This process of presidential permitting was affected by the turnover in the presidency in the U.S. whereas Democratic presidents Obama and Biden were more supportive in ending the pipeline, the Trump presidency allowed the company in charge of the pipeline to re-apply for a different permit (Gillies, 2021). Despite being canceled by the Biden administration for not being consistent with his economic and climate goals, the Keystone XL Pipeline represents only the first of the many battles that Sioux people will need to overcome.

Today, the Dakota Access Pipeline remains functioning, and the Sioux tribe is still fighting to stop the pipeline and other native groups such as the Anishinaabe tribes are doing the same for the Enbridge Line 3. As mentioned earlier, the Dakota Access Pipeline was approved by former President Trump in 2017, indicating the significance of polarization on the issue across party lines. Party polarization on the construction of the Keystone XL Pipeline was evident during the Obama administration where the decision to delay the review process indefinitely was made by President Obama in early 2014, but a Republican-controlled Congress passed a bill attempting to force approval of the Keystone XL Pipeline passed in 2015 (Woods, 2015). President Obama

then vetoed this bill and due to the partisan divide in Congress, Congress could not come up with a two-thirds majority support to override former President Obama's veto.

When the application for a presidential approval was first given to President Obama, the Department of State identified 84 native tribes that were going to be affected by the "black snake," referring to the pipeline; more notably of these tribes was the Great Sioux Tribe (Woods, 2015). According to Woods, the "proposed pipeline runs directly through a Rosebud Sioux spirit camp and the unceded treaty lands of the Great Sioux Nation, as recognized by the Treaty of Fort Laramie of 1868," indicating another challenge for land rights, as what happened in Standing Rock. Moreover, many activists saw the Keystone XL Pipeline as unnecessary because it is an extension of the existing Keystone pipeline system. Additionally, the biggest problem with the Keystone XL Pipeline is that TransCanada, the company leading the pipeline project, strategically designed the path of the pipeline to avoid tribal land – which proved to be difficult – but announced that they had no obligation to consult with the tribal nations in the United States and instead went directly with landowners for the acquisition of land for the project (Hamilton, 2016). This response from the Canadian company fueled an angry response from protesters; many of whom identified as Indigenous.

Indigenous feminism also played a major role in the Keystone protests. In live television, protesters were seen to display posters and state chants of the following: "It is our turn to use the voices that the colonizers understand to say our mother the Earth has withstood all that she should ever withstand on our behalf" (Bromwich, 2020). By feminizing and calling the Earth a mother, Indigenous groups have depicted their fight in different ways: (1) by personifying the Earth, Indigenous groups have asserted that the Earth is capable of emotion and understands degradation; (2) by calling the planet a mother, they have attributed nurturing qualities to nature for their ways of life and by doing so, they've established a shared understanding of their responsibilities to care for nature as it takes care of them; and (3) by gendering the planet, the term "Mother Earth" depicts the struggle as an alternate to the patriarchal and colonizing attributes of capitalism. Thus, the use of gendered descriptions of the movement created a universal understanding among Indigenous groups of the problem and possible calls to action.

Additionally, this depiction opens the movement to a whole pool of players that don't necessarily have Indigenous ties. The depiction of the pipeline protests as a struggle to save Mother Earth has turned the movement into a land-based mission, easily understood by environmental organizations as a conservation goal. In other words, it allowed a science-based movement (i.e., environmentalism) to understand something that is heavily based in culture.

Conclusion:

Both protests pertaining to the Dakota Access Pipeline and Keystone XL Pipeline represent a new type of social protest called connective action. Unlike collective action, connective action relies on increasingly fluid social networks – which includes digital platforms – instead of traditional, formal networks (Bennett & Segerberg, 2012). The connectedness that comes from technological innovations has made it easier for Indigenous groups to consult with one another and participate in one another's movements and advocacy efforts. Therefore, we see more "conscious constituents" forming and aiding in these efforts. After all, liberation from the capitalist framework of ownership "can and will only be strengthened by making new relatives and practicing traditions of belonging and incorporation that are not based on capitalist and

colonial notions of difference, exclusion, scarcity, and competition” (Yazzie & Baldy, 2018). Like with most things in everyday life, Indigenous peoples see the borders as a social imaginary; they see water as a universal struggle because it runs and interconnects across nations, continents, and other man-made boundaries of territory. Therefore, for Indigenous people, water is also a connection that bridges different cultures and ways of life, and this portrayal of the struggle allowed these water protests to succeed in the way that they did.

Both of these mobilization efforts provide us with important frameworks for the Indigenous politics of water that can be used in future mobilization efforts. The Dakota Access Pipeline water protests demonstrated the importance of treaties by shaping their movement around their reserved rights for fishing, farming, and gathering. Under U.S. law, these rights apply to Native Americans even in lands that they don't have title to, so by claiming that the leakage under the Dakota Access Pipeline could influence these cultural activities, the country will be forced to act; especially if the Sioux nations decide to pressure the Biden administration to close the Dakota Access Pipeline for good. In the Keystone XL protests, it was important to understand the role of Indigenous feminism in challenging the patriarchal model of colonization while creating a depiction of nature as sentient and living. This allowed the movement to create a sense of shared responsibility to protect the water resources that were likely to be tainted by the Keystone XL project.

More so, both projects have shared similarities. For instance, both have been greatly affected by the political partisan divide that is prevalent in American politics. The Obama, Trump, and Biden administrations have highlighted the easy reversals of decisions regarding the Keystone XL Pipeline. Additionally, the Trump administration approved the final construction of the Dakota Access Pipeline despite serious public disapproval of the project. Environmentalism in the United States has been a Democratic policy for decades and it would be important for Indigenous groups to take advantage of the Biden administration to push for the closures of other pipelines, especially as President Biden claimed that the Keystone XL Pipeline does not match his policy initiatives. Lastly, political engagement would be crucial in future elections as the maintenance of Democratic control in the presidency and legislature is consequential for environmental policy, which as established in this analysis, affects Indigenous rights. Thus, it is important to keep in mind that electoral justice and the protection of voting rights are just as crucial towards the fight for environmental justice and Indigenous sovereignty.

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The Incompatibility Between Business and Sustainability: Why Clothing Companies Greenwash

Jenny Zhang

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Abstract: As one of the most harmful industries to the environment, the fashion industry has been attempting to pursue more eco-friendly practices, especially since their consumers are more attracted to products labeled as “sustainable.” However, fashion companies’ lack of transparency and ambiguity leads them to greenwash, whether consciously or accidentally. In this project, I research three clothing companies— Inditex, Kerling, and Patagonia— and compare their consumption, practices, and level of transparency. While Kerling consumes less than Inditex, the large difference is not only a result of the former actively trying to become more sustainable, but also the fact that they are a luxury brand and have the money and branding to do so. I conclude that while all companies are trying to be more environmentally sound, Patagonia succeeds in this the most because of its high level of transparency in the materials they use and practices they enact. However, Patagonia also reveals that they cannot reduce their footprint when their sales increase, showcasing the difficulty of maximizing profit while also being sustainable. Though there are many possible solutions that fashion companies can try to execute, they all contain some unrealistic aspects that could lead to more problems.

Keywords: fashion, sustainability, consumption, transparency

Introduction:

A man walks into H&M to buy a black t-shirt and chooses between two identical-looking options: one is \$20; the other is \$25, but the more expensive shirt has a label that says it is sustainable. He decides to spend an extra \$5 to be more environmentally friendly and buys the latter option. The man feels good about his purchase because he believes that he is helping the planet, and yet, he has no idea what these extra \$5 are for. Is it to pay for the recyclable materials that the shirt is made of? Does it help provide safer working conditions and better salaries to the clothing company’s employees? Or is the company using the extra money to pay for the carbon tax? What does the sustainable label mean and where does the money go? We don’t know and the information is not disclosed by the brand.

From startups to large brands, many clothing companies market themselves and their products as sustainable in order to gain more profit even though they are not as green as they claim they are.

In 2019, NYU Stern's Center for Sustainable Business found that 50% of consumer packaged goods (CPG) growth from 2013 to 2018 came from sustainability-marketed products (Whelan & Kronthal-Sacco, 2019), meaning that either there are more items marked as sustainable or that consumers are actively trying to buy products that are eco-friendly. However, this leads to the problem of greenwashing—the act of a company providing misleading information about how environmentally sound their products are (Kenton 2022). In this essay, I will argue that although greenwashing and performative environmentalism are harmful to the planet, it is difficult for clothing businesses to truly label themselves and their products as sustainable because of their obligation to satisfy their consumers' high demands while also maximizing their profits. The fashion industry is actively trying to reduce its planetary impact; nonetheless, the right actions, reforms, and balance are still not enough for many companies to develop into what they market themselves as or what they aim to achieve.

Using statistics and data on the fashion industry as a whole, it is evident that it is one of the largest markets around the world, which also creates the most negative impact on the environment. According to *Bloomberg* article "The Global Glut of Clothing is an Environmental Crisis," the U.S. throws away up to 11.3 million tons of textile waste annually, which is about 2,150 pieces of clothing per second (Dottle and Gu 2022). Keeping in mind that this is solely one country, the amount of clothing thrown away in the world is significantly more concerning. Moreover, studies have shown that people throw out clothing after wearing them an average of 7 to 10 times, resulting in 87% of clothes ending up incinerated or in landfills (Dottle and Gu 2022). Since thrifting and buying second-hand clothes from apps such as Depop and Poshmark has become trendy, one might be confused as to how such an abundant amount of clothes end up in waste. Unfortunately, the truth is that the majority of these clothes do not sell and end up in landfills (Pucker 2022).

In addition, the fashion industry accounts for 10% of the global carbon dioxide output, which is more than international flights and shipping combined, according to the United Nations Environment Programme (Dottle and Gu 2022). Indisputably, these numbers are significantly too high for an industry that is trying to reduce its footprint. Kenneth P. Pucker, former chief operating officer of Timberland, states that "the fashion industry has failed to lessen its environmental impact," arguing that companies are not transparent enough, recycling does little to limit environmental damage, bio-based materials are too expensive, and that new business models such as thrifting and renting are not effective enough (2022). If it were easier and cheaper for clothing companies to become more eco-friendly, then they would not be greenwashing their consumers.

The Ambiguity of the Word "Sustainable":

The first problem that leads to greenwashing in the fashion industry is the misconception of what the word "sustainable" means. Naturally, consumers would assume that being sustainable means it is better for the planet, but in what way? Does it mean producing less carbon? How much carbon is considered sustainable? Or does it mean the item is made out of natural and recyclable materials? Why are these materials supposedly sustainable? Since most companies do not disclose this information in their marketing, customers are greenwashed into thinking they

are buying eco-friendly products without knowing how they are supposedly helping the environment.

Generally, sustainability consists of five factors: environmental, employment, social, financial, and governance, leading to the issue of whether the definition should include just one of these elements, a combination of them, or all five (Jacobs 2019). Since branding themselves as sustainable is an incentive for more customers, it makes sense for most businesses to only encompass one aspect of the five in their practices. However, this means that while one company could be extremely devoted to being sustainable and implementing all five dimensions into their practices, another company could be fulfilling only one. The majority of the time, the company would not be transparent enough for consumers to tell. Disregarding the amount of effort and change being made in each company, both businesses would label themselves as “sustainable” and attract more customers because of how broad and ambiguous the term is. Therefore, building a consensus around what being “sustainable” means instead of having a variable definition would pose fewer risks for greenwashing. Keeping in mind what the word “sustainable” could exemplify and how this could lead to accusations of greenwashing, one can look into whether or not fashion companies are veritably becoming less harmful to the environment.

General Improvements in the Fashion Industry:

Although there are significant issues in the fashion industry that greatly impact the climate and must be solved, the industry is generally trying to improve its practices. Especially since a Boston Consulting Group that surveyed consumers in five countries found that “38% of consumers are ready to switch from their preferred brand to another because it credibly stands for positive environmental” (Virijevic-Jovanovic et al. 2019), companies have a greater incentive to become more environmentally friendly. Furthermore, the advancements made by clothing companies can be seen with the Pulse Score—a score from 1 to 100 that measures and tracks the sustainability of the global fashion industry in key environmental and social impact areas—and reveals that the fashion industry is not necessarily failing to become more environmentally sound (Virijevic-Jovanovic et al. 2019). From 2017 to 2019, the Pulse Score increased from 32 to 42, which is a significant improvement (Virijevic-Jovanovic et al. 2019). Since these numbers are relatively low on the scale, there is much room for improvement and opportunity for the industry to become more sustainable. However, this leads to the question of how high the fashion industry can realistically make their Pulse Score.

Analyzing Fashion Companies: Inditex, Kerling, and Patagonia:

Sustainable improvements can be seen when diving deeper into the impact report of fashion companies. Inditex is a Spanish multinational clothing company and the biggest fast fashion group in the world. Their brands include Zara, Bershka, Stradivarius, Oysho, Pull&Bear, Massimo Dutti, Uterqüe, and Lefties, and are known for satisfying their customers with trendy articles of clothing and cheap prices. As a fast-fashion company, it is difficult to develop clothing quickly while also reducing consumption and being transparent. Their annual report states that global energy consumption has decreased to 4.5 million gigajoules in 2020—substantially less than the 7 million GJs consumed in 2018 (Inditex 2020). Additionally, the

increase in sustainable cotton almost doubled from 38 thousand tonnes in 2019 to 73 thousand tonnes in 2020 (Inditex 2020). This could imply that Inditex is truly attempting to use more sustainable materials in their clothing. However, the fact that they do not disclose the percentage of sustainable cotton used compared to other materials used could mean that those materials are also increasing, which would not make Inditex seem as environmentally sound as it appears to be. Furthermore, no one knows exactly what “sustainable cotton” means because Inditex is not transparent, bringing back the issue of the ambiguity of the word “sustainable.” There are also fewer inspections, down more than 15,000 from 2019 to 2020 which leads to the question of whether they are actually checking to see if items are less sustainable or not (Inditex 2020). Thus, while Inditex is generally reducing its carbon footprint, some of the statistics and use of language in its annual report remain equivocal.

On the contrary, luxury brands do not have the same pressure to create clothing quickly while also being cheap, making it easier for them to incorporate sustainable practices. Since many consumers are fixated on the brand and would buy certain products because of their label of being luxurious, these brands are less susceptible to marketing themselves as sustainable because people would purchase their products regardless of the environmental impact. Using the Universal Registration Document of Kering— a luxury group that includes brands such as Gucci, Saint Laurent, Bottega Veneta, Balenciaga, and Alexander McQueen— the difference between the impact of luxury brands and fast fashion brands on the environment becomes apparent. While they don’t have all the exact data as seen in Inditex, they state, “90.6% of our electricity is green, contributing to the 74.7% decrease in our CO2 emissions linked to energy consumption since 2015, 40% of our raw materials with potential for circularity are already circular, and 74% of our key raw materials are aligned with our Kering Standards” (Kering 2020). Again, because they don’t state what “green” or what their “Kering Standards” are, the consumer is left oblivious of how sustainable the products they are buying are.

Figure 1: Total Energy Consumed (MWh) by Inditex and Kerling in Recent Years

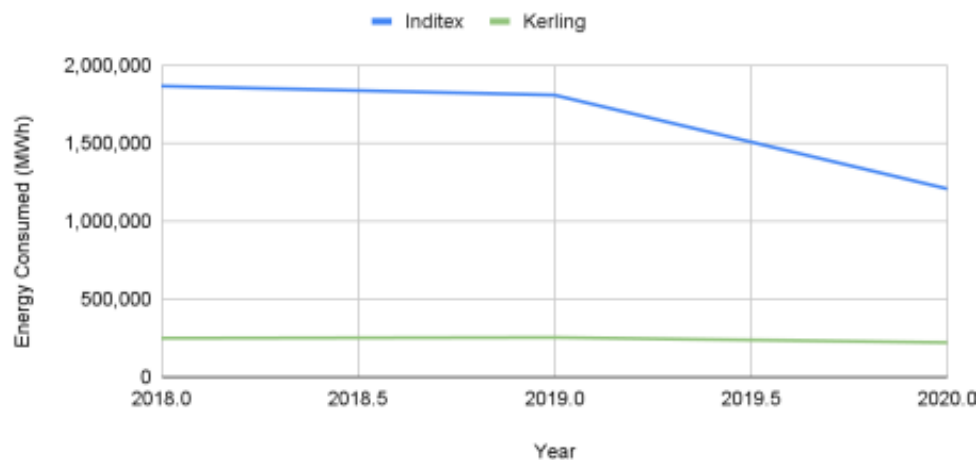


Figure 1: Total Energy Consumer (MWh) by Inditex and Kerling in Recent Years
Data from Inditex Group Annual Report and Kering 2020 Universal Registration Document

As seen in the graph above, Kering's total energy used in 2020 was 220 thousand MWh, which is less than $\frac{1}{5}$ of the energy consumed by Inditex (Kering 2020). Therefore, luxury brands are doing much better for the environment, which could be an outcome of how much time they have to make products and the amount of money they make. However, this also reveals an aspect of climate injustice because the consumers who have enough money to buy products from luxury brands are buying more environmentally sound products by default. Meanwhile, the people who are not fortunate enough to pay for brands such as Gucci and Balenciaga have to consume cheap clothing from fast fashion companies because that is the only type of clothing they can afford, and as a result, they are seen as less cautious with their consumption behaviors because those brands are practicing less sustainable methods. Additionally, since the cheaper brands use cheaper materials, the people who buy their clothing have to constantly replace their clothes with more cheap and unsustainable clothing, and the cycle goes on. On the other hand, items from luxury brands are more likely to remain of good quality for a longer period of time, and even if they are "out of season" and the owner does not want the product anymore, more people are likely to want that product because of the brand so it is least likely for that product to end up in landfills.

Although luxury and fast fashion brands are inherently different, they are similar in the way that they are not entirely clear on how they are sustainable and what their definition of being sustainable is. Meanwhile, Patagonia— a brand known for pushing itself to be as environmentally sound as possible— is transparent with its materials and processes to become more sustainable. Their website contains an "Our Footprint" section that clearly states the materials they use in their clothing such as recycled cotton, cashmere, and polyester, and has a clickable option in which they disclose information about that specific material and how it is better for the environment or harming it. Furthermore, the website includes detailed descriptions of the programs and initiatives that were taken with their employees and the kinds of conditions they are working in, acknowledging all of the specific actions they are taking and how they are trying to be more sustainable.

Not only does Patagonia tell their consumers exactly what they are buying and the entire process of where their clothes are coming from, but they are also transparent with the challenges they face to become more environmentally sound. In the Corporation Report of Patagonia of 2019, they note "we are working toward becoming a carbon-neutral company across our supply chain, but even as we make significant advances, such as the increased adoption of recycled materials, our footprint is increasing due to our growth of sales" (Patagonia 2019). The significance of one of the most sustainable brands struggling to fulfill its mission reveals the challenge of being a successful business and being sustainable at the same time; either companies don't have a significant growth in sales and are sustainable or they are sustainable and not profiting as much. As an effort to reduce their sales, Patagonia released a bold Black Friday ad in the *New York Times* with a photo of their jacket and large words, "Do Not Buy This Product" (Patagonia 2021). By releasing this ad, Patagonia states that in order for the company to meet its goals, fewer consumers would have to buy its products. This leads to the conclusion that no matter how much a company tries to be environmentally friendly, it must compromise some of its sales for the ecosystem or the fashion industry must adjust its entire system in order to truly help the planet.

Possible Solutions Taken:

The actions that must be taken to make companies want to be more sustainable while also increasing profit remains a bit unclear; however, a case study containing interviews with 5 Dutch and Belgian sustainable clothing brands reveals how competition and co-creation can influence how sustainable they want to be. Sometimes, competition would make companies want to make their products much lower than their true ecological costs, meaning sustainability is sometimes sacrificed in favor of economic profit (Molderez 2015). After interviewing each company and asking whether they think they are influenced by competition influence their competition, the study concludes that there is no influence on sustainable issues derived from competitors, but that each company thinks that they influence their competitors in the sustainable fashion industry, making this conclusion somewhat contradicting (Molderez 2015). As a result, the authors predict that this contradiction is the result of too much competition rather than co-creation, which highlights the problem of competition in the business world. This solution is a bit difficult to follow since the nature of the fashion industry and business as a whole is to have competition, meaning that in order to be able to co-create, clothing companies must prioritize sustainability more and start working together rather than against each other.

Another solution, given by Pucker, says the government must adopt more rules for the industry and tax carbon and water, discouraging their use (2021). Naturally, companies are not going to be willing to pay a certain amount of extra money, so if they are forced to pay more for the water they use and the carbon they emit, they would be more willing to find other ways to produce their clothing and use more renewable energy and recycled materials. Yet, Pucker counters himself early on in his article by commenting that recycling is oversold because of the inability to plan design at scale due to the variability of supply, limits to recycling technology, limited infrastructure, and shorter, lower-quality fibers resulting from recycled inputs and high cost (2021). Although government regulations sound like a good solution on paper, the actions that clothing companies must take to follow these regulations remain hazy.

Meanwhile, another article states that four core priorities— supply chain traceability, combating climate change, efficient use of resources, and a secure work environment— would help with all related to issues such as recycling fashion products, circular fashion, value chain management, environmental protection, social justice, and labor rights (Virijevic-Jovanovic et al. 2019). This seems like the most probable and reasonable development for the fashion industry to implement because the inspections of all their materials and practices throughout the entire clothes-making process would prompt the companies to practice more eco-friendly methods; however, it is not that simple. In order to use resources efficiently, pay their workers an acceptable amount of money, and release fewer pollutants into the air and water while also profiting, the company must go through some trial and error to find the correct balance, which could take years of practice. However, all of these initiatives nonetheless have the ability to reduce the carbon footprint of fashion companies and with the right kind of dedication, technology, and time, there is hope that fashion companies could have a more sustainable future.

Conclusion:

The fashion industry has deeply affected the environment with its large emissions, use of water, and waste of materials. Especially since consumers prioritize sustainability in what they buy, the fashion industry must find a balance between the environment, society, and economy in order to be profitable and sustainable at the same time without greenwashing their consumers. One of the main issues that lead to greenwashing is the ambiguous definition of what being sustainable means, and because of this, many clothing companies such as Inditex and Kering simply say their products are “sustainable” without not being transparent enough. Companies that are transparent such as Patagonia reveal that even with the amount of effort and sustainable practices they are taking, their growth in sales still increases their footprint. Thus, many companies are trying to find solutions to help the fashion industry become more sustainable, such as co-creation, circular fashion, and government involvement, and although these actions are still not enough to completely reverse the damage done, they are a great start.

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Cura Terra

Co-Benefits of Energy Transition in U.S. Marginalized Communities

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Abstract: As fossil fuel energy usage continues to be one of the largest drivers of climate change in the United States (US), marginalized communities are vulnerable to climate impacts in unique ways. Additionally, the fossil fuel-centric organization of cities and states has promulgated air pollution that affects all people, but influences marginalized communities to an especially high degree. This phenomenon raises two central questions: how does fossil fuel energy create negative health impacts, and how can these effects be avoided? This paper will employ data from studies that utilize past and present climate impacts to indicate that without intervention, the negative health impacts caused by air pollution such as cardiovascular and respiratory disease, premature death, and mental illness will increase. Furthermore, this paper will provide a survey of case studies that intend to address resource disparities in marginalized communities in California and New York. The successes and failures of these adaptations can inform the directions of future programs that aim to prioritize marginalized communities. The case study survey indicates that while interventions to facilitate energy transition are beneficial for reducing carbon emissions and air pollution, programs should include deliberate measures to mitigate the negative health impacts that air pollution has long caused in marginalized communities.

Introduction:

Climate change looms as an enormous threat to all aspects of life throughout the globe as the atmospheric threshold for CO₂ emissions before irreversible and drastic impacts is rapidly approaching. Many of the environmental impacts threatened by climate change have associated health consequences on the populations that will experience them. In the US, each region experiences unique sensitivities due to its climate, such as droughts in the West and hurricanes in the East and Southeast. What exacerbates climate change across the nation, however, is the reliance on fossil fuel technology to facilitate transportation and energy consumption. Additionally, marginalized communities face a unique susceptibility to climate impacts because of their disadvantaged socioeconomic position. This paper will argue that energy transition is vital for marginalized communities due to the environmental benefits and the positive health impacts of mitigating air pollution, but challenges arise when facilitating the equitable

implementation of interventions and community input. It will begin with a survey of the health risks and climate drivers of air pollution with an emphasis on the burden on marginalized communities. Following a description of the co-benefits of energy transition away from fossil fuels, the paper will delve into several case studies involving energy transition for marginalized communities. The paper will conclude with recommendations for further research trajectories in exploring the co-benefits of energy transition.

Health Risks of Air Pollution as a Result of Fossil Fuel Energy Systems:

In the US, transportation is responsible for 27% of CO₂ emissions, electricity is responsible for 25% of emissions, and household or residential use is 13% of emissions (Environmental Protection Agency(b), 2022). Nonrenewable energy sources like coal and gas continue to be the dominating sources for electricity generation at 22% and 38% in 2021 respectively, while gas is the energy source responsible for 96% of emissions generated by transportation (U.S. Energy Information Administration, 2022). Fossil fuel based energy has contributed to vast environmental degradation and negative health impacts. Fossil fuel consumption directly results in the proliferation of several different kinds of harmful pollutants into the atmosphere. Particulate matter (PM) pollution, which is composed of solid particles and liquid droplets, forms as a result of fossil fuel burning and accounts for 63% of environmentally related deaths (NYU School of Law, 2022). PMs can also enter the air due to other climate events such as drought or heavy rainfall, but the exacerbation in extremity and frequency of such climate events is also a result of fossil fuel consumption. Some PMs can enter human bodies and cause numerous health problems, including cardiovascular disease, asthma, respiratory issues, lung damage, and premature death (NYU School of Law, 2022). The smaller the PM is, the higher the association is with hospitalization and illness. Many other pollutants have similar associated health burdens. Ozone pollution, which is the result of atmospheric oxygen's chemical combination with nitrogen oxide outputs from fossil fuel-burning plants, also yields respiratory illnesses and hospitalizations. Nitrogen oxides are among many harmful chemicals that are released through coal burning, others of which are carcinogens, arsenic, mercury, and sulfur dioxide. Proximity to power plants and refineries where these pollutants are emitted yields large-scale impacts for communities, which will be discussed in later sections of this paper. Passenger vehicles such as cars, buses and trucks also produce nitrogen oxides, carbon monoxides, and other pollutants (Environmental Protection Agency(c), 2022). Because most intercity and interstate travel is designed to be completed via passenger vehicles on the U.S. network of highways, the effects of transportation on air pollution are felt across the country. However, the presence of pollution in urban areas reinforces additional health risks that are unique to urban landscapes. For example, the Urban Heat Island (UHI) effect is the phenomenon describing the elevated temperatures that result from the concentration of tall city buildings and human activity. One of the mechanisms that is said to drive the UHI is that pollutants in the city absorb and re-emit thermal radiation (Kleerekoper et al. 2012). As heat is trapped in the city, the health problems associated with extreme heat, including increased heat stroke, cardiovascular disease, dehydration, mental illness, and heat-related mortality, become more widespread.

Climate Linkages to Air Quality Degradation:

Air quality is linked with several climate hazards that interact with different sources of pollution. While greenhouse gasses (GHGs) have long-term warming effects due to their longer atmospheric lifetime, aerosols have short-lived air quality impacts that manifest more quickly. For example, ozone level and temperature have a strong positive correlation up until the mid-90°F threshold where a phenomenon called ozone suppression stops the rise of ozone levels (Burrows, 2016). Ozone and temperature have been shown to have independent associations with daily mortality in both urban and non-urban areas (Madrigano et al., 2015). Projections by the Harvard School of Engineering and Applied Sciences indicate that if emissions continue without intervention, some regions of the U.S. “could experience between three and nine additional days per year of unhealthy ozone levels by 2050” (Burrows, 2016). These projections were derived from a model that utilizes existing observations, thus strengthening the climate linkage between the two functions.

A similar linkage has been found between aridity and ambient dust. While aridity and ambient dust have long had an established relationship as a lack of moisture causes soil particles to be loosened from the ground and lifted into the air, the influence of climate change on this process is necessary to consider the severity of dust levels in the future. Using the Representative Concentration Pathways (RCP) with the highest projected temperature increase (RCP8.5) in combination with observed impacts, Achakulwisut et al. project that annual mean fine and coarse dust particle presence in the U.S. Southwest will increase. The public health implications of these projections are stark, indicating that “premature mortality associated with dust exposure increases by 220% and hospitalization increases by 160% toward the end of this century, due to combined increases in population, disease rates, and dust levels” (Achakulwisut et al., 2019). Studies also project the economic damages associated with the climb in disease and mortality to be an additional \$22 billion and \$47 billion per year in 2050 and 2090, respectively, of which 27% and 36% are respectively driven by climate changes (Achakulwisut et al., 2019).

Along with aridity, air pollution and aeroallergen levels are projected to increase as the potential for wildfires increases. When wildfires occur, aerosols and air toxins are released into the atmosphere. Climate change creates more periods of low moisture periods, which are conditions where wildfires are able to occur more frequently and burn for longer (Neumann et al., 2021). In both RCP4.5 and RCP8.5, climate change projections amplify mortality, hospital admissions, emergency department visits, bronchitis, asthma, and loss of activity and work days for children and adults (Neumann et al., 2021). Additionally, increasing carbon dioxide levels has promoted the growth of plants that release aeroallergens (Fann et al., 2016). There is a weakly understood association between weather and the exacerbation of allergies, which is impacted by climate change as it influences rainfall and temperature extremes.

Health Burdens In Marginalized Communities:

Environmental issues produce a particularly heavy health burden on low-income communities. The linkage between low-income communities and environmental disadvantage reinforces itself. Because marginalized communities often do not hold levels of influence or monetary stakes in local governments regarding zoning decisions, they are more susceptible to being burdened with environmentally harmful facilities in close proximity. Additionally, the quality of housing and neighborhoods near a power plant or industrial facility will be

lower, forcing low-income people to compromise their rights to clean air and green space for affordable housing. This relationship between environmental privilege and income leads to environmental racism, as it is often low-income communities of color who are targeted by such discrimination. For example, people of color are twice as likely as white people to live near a dangerous chemical facility, such as a toxic waste facility, and they suffer worse air quality across several pollution metrics (Tubert, 2021). A significant reason for this discrepancy is the location of low-income communities next to major roadways. In order to construct highways in the mid-20th century, many cities displaced communities of color to convert their land into roadways (King, 2021). As such, former communities are both now divided by these high speed transportation routes and isolated from easy access to the roadways, preventing them from being connected with the rest of the city.

Due to this linkage, there are many outsized health negative consequences, which include not only the negative health impacts of burning fossil fuels but also disease from ingesting contaminated water and exposure to lead poisoning through pipes. Ethnic minorities are also more likely to have asthma than white population (Fann et al., 2016). On top of existing health disparities, the exacerbation of climate change means that those with the greatest current vulnerability to its associated risks will be most negatively impacted. For example, the percentage of Black and African American individuals who will live in areas with the highest projected increases in childhood asthma and extreme temperature related deaths will rise as the globe warms (Environmental Protection Agency(a), 2022). Marginalized communities have a reduced capacity to cope with extreme heat events and air pollution because of a lack of resources. While the full extent of environmental racism is beyond the scope of this paper, its responsibility for the greater climate risk on marginalized communities is a necessary backdrop against which the co-benefits of energy transition should be discussed.

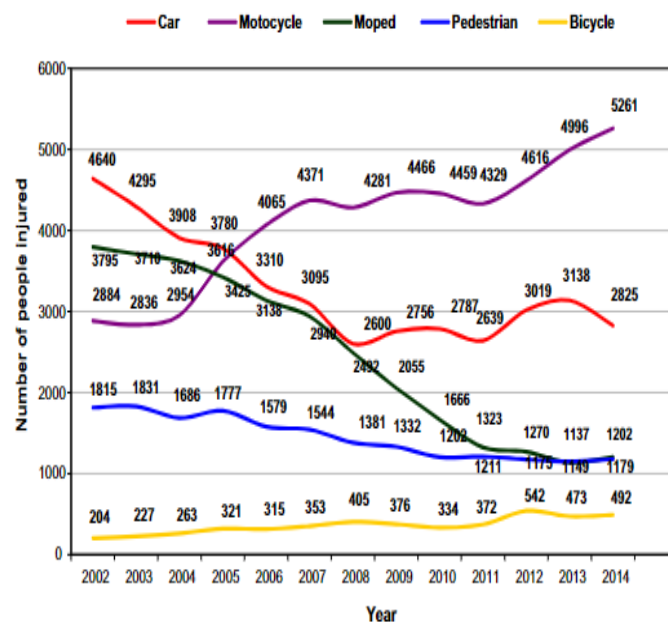


Figure 1: Accidents by mode of transport in Barcelona 2009-2014 (Pérez et al., 2017)

Co-Benefits of Energy Transition:

Energy transition is a vital aspect of mitigation in the climate crisis because of its direct consequence. If fewer fossil fuels are consumed to produce energy, there will be fewer CO₂ emissions and other pollutants like PMs, ozone, and nitrogen oxides in the atmosphere. There are a multitude of co-benefits that would arise from such a transformation to the energy system. These include decreases in cardiovascular morbidity and mortality, asthma, and respiratory diseases. An aggregation of various energy policy studies show that with these health improvements the U.S. may avoid up to 300,000 premature deaths through 2050, and “health and climate damages of \$100 billion to \$250 billion through 2030-2035 and \$1 trillion to \$3 trillion through 2050” (Esposito, 2021). Avoiding health damages and deaths on such a large scale avoids putting a strain on healthcare systems and economic function, two sectors that are especially vulnerable to climate change.

Energy transition in the transportation sector can be conceptualized in two fashions: an energy source transition from gas to renewable sources, solar or electricity, and a reduction in vehicle usage altogether through the use of active transportation like walking, biking, scootering, or running. The option to transition sources has been facilitated by technological advancement, which also spurs improvement in vehicle and fuel efficiency. The emissions from passenger vehicles have been drastically decreased through Clean Air Act protections and vehicle emissions standards. A study evaluating the level of emissions by vehicle class and pollutant from 2008-2017 demonstrated that nitrogen oxides, sulfur dioxide, PM_{2.5}, ammonia and VOC emissions have all decreased over this period, although carbon dioxide emissions remain at relatively the same level. As a result, PM_{2.5} attributable deaths have also decreased by over 50% (Choma et al., 2021). Given the historical indication that there is a reduction in mortality when transportation emissions are reduced, one can expect further decreases as the trend continues. The direct impact of reduced conventional air pollutants also translates to increased physical activity levels and decreased noise in areas closest to roadways, each of which has associated health co-benefits. Reduced air pollutants will lead to decreases in cardiovascular morbidity and mortality, asthma and other respiratory diseases.

Benefits pertaining to physical activity are more closely associated with interventions that facilitate active transportation. Most forms of active transportation facilitate exercise, which has health benefits such as reduced risks of heart disease, stroke, mental illnesses like depression or sleep disorders, cancer, dementia, obesity, diabetes and overall mortality rates (Litman, 2021). Additionally, active transit has led to an increase in overall wellbeing and happiness compared to those who use motor vehicle transportation (Perez et al., 2017). Road safety impacts are also widespread and multifaceted. In Barcelona from 2009-2014, car-related injuries decreased by 60% as a result of policies that promoted active transportation (Fig. 1). While the data shows a slight increase in cyclist injuries, the increased level of bicycle usage among people overall actually translates to a “5.5% decrease in crashes resulting in cyclist injuries per 100,000 km on working days (Perez, 2017)”. Overall, the physical health benefits of active transportation combined with its environmental friendliness makes it a compelling adaptation measure to supplement the proliferation of electric and efficient vehicles.

Energy Transition and Environmental Justice:

While all people who are susceptible to the negative health impacts of climate change should experience the co-benefits from energy transition, interventions should be applied with an environmental justice lens given the burden of environmental racism on marginalized communities. Environmental justice is a concept that was born in the 1970s by Dr. Robert Bullard, who pioneered studies about the disproportionate impacts of pollution on communities of color. Environmental justice is defined by the U.S. Department of Energy as “the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies” (U.S. Department of Energy, n.d.). Fair treatment refers to the eradication of undue burdens on marginalized communities, namely their proximity to waste facilities and power plants that cause outsized health impacts. Meaningful involvement requires that the community that will be affected by any given decision that could potentially create or remove an environmental burden must be not only heard but given an active decision-making role in the process. While fair treatment and meaningful involvement are righteous ideals to pursue, the reality for many marginalized communities is that more powerful entities will pretend to entertain their voices instead of genuinely considering them. These realities present obstacles of inequity in achieving energy transition, particularly for communities of color on a local scale. For example, the community of Manchester, a predominantly Hispanic neighborhood in Houston, Texas, is in close proximity to the Valero Refinery, Texas PetroChemical Group, and Goodyear Synthetic Rubber Plant. In the documentary *The Condor and the Eagle* (2019), community members are shown petitioning against the Valero Refinery’s request for a tax break to the Houston city council. Climate activist Yudith Nieto specifically voiced her frustration about her community being excluded from decisions about the refinery, namely because its continued operation causes high rates of asthma and cardiovascular disease in her neighborhood. The city council ultimately granted the refinery the tax break, essentially ignoring the demands (*The Condor and the Eagle*, 2019). Amidst other examples of failed representation for marginalized communities, it is worthwhile to closely evaluate instances when governments aim to prioritize community input and achieve equitable treatment.

Energy Systems Transformation Case Studies:

Bearing this environmental justice lens in mind, this paper will now turn to a set of case studies regarding energy transition interventions in marginalized communities. The criterion by which these programs will be analyzed is the level of community involvement entailed, the fair treatment that results from them, and the level of tangibility of the program’s health impacts.

California Solar Green Tariff Program

The California Solar Green Tariff (CSGT) Program is a statewide program devoted to providing solar energy at a 20% discounted rate to disadvantaged communities (DACs). The definition of a disadvantaged community is a community that suffers burdens of “poverty, high unemployment, air and water pollution, presence of hazardous wastes as well as high incidence of asthma and heart disease” (California Public Utilities Commission (a), 2021). These metrics among others pertaining to the social determinants of health, such as education, linguistic isolation, and housing burden, are compiled by the California Environmental Protection Agency (CalEPA)’s analytical tool called CalEnviroScreen. The tool provides an interactive map that identifies the

specific DACs via their census tracts. The reason for the creation of the CalEnviroScreen map and the DAC categorization was the California Senate Bill 535 California Climate Investments to Benefit Disadvantaged Communities. Levels of investment granted by the CalEPA are thus sensitive in an environmental justice lens. The program derives its basis from the Green Tariff Shared Renewables (GTSR) program, which created the initial means for the dispensation of renewable energy sources (California Public Utilities Commission (b), 2021). The primary targets of the initiative are customers who are unable to install solar panels or solar technology in their homes. Instead of allowing this to be a barrier to solar access, the program recipients receive solar energy from a local sponsor. The local sponsor is a necessary condition for a community to receive the program because it will serve as the hub where the solar energy is drawn from, and it will be the force within the community that is responsible for conducting outreach to facilitate members of the community joining the program. The sponsor itself will have access to 25% of the project's capacity, while the remaining customers can access 75% of the capacity. Each CSGT project must allot 50% of its capacity to DAC customers (Baker et al. 2019).

The primary limitation of the CSGT is its scale. The capacity of the entire program is 41 megawatts, which supports about 6,700 households. Census tracts are measured by population size, so it is unclear precisely how many people will receive service through the CSGT. However, there are 9 million residents in the top 25% most disadvantaged communities per the CalEnviroScreen data, so a large portion of them would not have access to the CSGT specifically (California Office of Environmental Health Hazard Assessment, 2022). Communities are selected for the program based on auctions. Given that the program is relatively novel and that it hinges upon local levels of cooperation, the program's expansion is likely contingent on the success of its first iterations. Additionally, while the source of energy for the low-income households is now renewable, the recipients of energy generated by the power plants or facilities in the low-income neighborhoods will be sources of demand that prevent the power plants from shutting down. Without the cessation of operation, the negative health impacts of proximity to a fossil fuel plant will persist even with the CSGT. The program does not entail any supplementary health benefits beyond the reduction in energy prices and the potential creation of jobs within the community. This saved money may allow families to save extra funding on living expenses each month and potentially spend it on higher quality health services or community assets. However, failing to address the root causes of disease and illness severely limits the benefits that such a project could incur. It is also unlikely that the associated job creation will have widespread impacts given the small scale of the program. Once the solar panels are initially installed at the sponsor location, the job creation aspect is essentially complete barring any further maintenance of the panels (Baker et al. 2019). Solar panel maintenance and installation is also a job that demands prolonged outdoor exposure, which is another form of environmental inequity. According to the Intergovernmental Panel on Climate Change (IPCC) AR6, global heat extremes have increased and been attributed to human activity with a high degree of confidence (Figure SPM.3, 2021). As temperatures continue to rise due to climate change, occupational heat hazards could endanger workers. The Initiative for Energy Justice (IEJ) analyzed the CSGT along its Energy Justice Scorecard metrics, which ask whether a program entails sufficient community involvement, remedying of previous harms, and the benefits incurred to the community on a scale of 1 (no) to 5 (yes). The CSGT receives a 2 on benefits, as there are no advertised health or social benefits beyond the electric bill savings.

New York Community Distributed Generation Program

The New York Community Distributed Generation (CDG) program mirrors the CSGT in its intention to make solar energy more accessible and inexpensive to low-income individuals. The CDG is a smaller program within the larger statewide initiative called Reforming the Energy Vision (REV). The REV arose out of a desire to modernize energy systems in NY, especially in light of the energy system's vulnerability to Hurricane Sandy in 2013 (Baker et al., 2019). The program is not limited to people within a certain income bracket, but the community based model is designed to decentralize renewable energy sources. The CDG involves a subscription system where participants can opt to receive their energy from a local solar farm rather than needing to install their own solar panels (Rochester Gas & Electric, 2022). Participants can annually save between 5-10% of their electricity bills, offering both a financial and environmental incentive to sign up. Developers wishing to join as new solar providers can become accredited through the CDG application process, through which they must prove that they meet generation capacity and hosting requirements. NY residents can identify the closest CDG site using the NY state community solar project locator. The site includes an interactive map where customers can select their utility provider and view all CDG projects in their areas. Across the state there are high concentrations of solar providers near most of the state's major cities.

In terms of equity considerations and implementations, the intentions and messaging of the program were not fulfilled in execution. In the formation process of the program, an attempt was made to quantify and factor in the value of environmental justice to the energy pricing. The program creators also established a Low-Income Collaborative to engage stakeholders about how to promote low-income participation, but none of the collaborative's input was taken into consideration for the project's final product. When Phase 1 of the CDG began development in 2015, the developers intended to prioritize CDG projects in areas where at least 20% of subscribers would be low-to-moderate income (Baker et al. 2019). However, this aspect of the project did not come to fruition, leaving the low-income sector without adequate market support. As of now, there is no particular incentive to involve low-income, marginalized communities in a CDG program beyond the general discount on price.

Transportation Transformation Case Study:

San Diego Regional Active Transportation Program + Climate Action Plan

As was previously discussed, energy transition in the transportation sector can involve active transportation interventions and technological adaptations, such as the increase of electric vehicle usage. Returning to the state of California, one can evaluate the quality of transportation interventions in the city of San Diego to identify non-uniform transition commitments. In 2015, the City of San Diego released its Climate Action Plan (CAP), marking its pledge to cut the city's greenhouse gas emissions in half by 2035 (Harris, 2021). They intend to achieve this by shifting 50% of commutes in transit priority areas to biking, walking, and public transit by 2035. In 2013, the California legislature passed SB 99, which created a statewide Active Transportation Program (ATP). The program's intentions span across environmental and health benefits, including "increasing the proportion of biking and walking trips, increasing the safety of non-motorized users, reducing greenhouse gas (GHG) emissions, and enhancing public health" (California Transportation Commission 2022). Funding for projects is allocated at the

and a multitude of other relevant factors. The definition for “climate equity” was developed in partnership with community-based organizations, which in part fulfills the meaningful participation aspect of environmental justice. Several environmental indicators such as flood risk, fire risk, and UHI index reflect census tracts’ vulnerability to climate change, but future climate influence on health indicators is not reflected.

The CEI is limited in its choices for indicators due to gaps in data for certain metrics. For example, they currently lack a sufficient way to track air quality on a census tract level. The index has five categories of access to opportunity, ranging from very low to very high access. Within the very low access census tracts, 96% of residents are people of color, and the low access tracts have 81% residents of color (City of San Diego Sustainability Department, 2019). The CEI data reflects a large gap between intentions of equity and the reality for marginalized communities. Further, the actual environmental impacts that the 2015 CAP aims to achieve have not come to fruition within a reasonable timeframe. The 2021 iteration of the SANDAG CAP included projections that estimate only 27.2% of commuters will utilize bike, walking and transit by 2035, which severely undershoots the 50% target laid out in the 2015 CAP (Harris, 2021). There has also been no data collection on whether theoretical co-benefits of active transportation and energy transition have manifested in San Diego. The CEI report will be refreshed every five years to track the city’s progress, so its next iteration in 2024 will provide the first benchmark for data comparison. The CEI’s holistic composition as a linkage between health, environment, and socioeconomic factors makes it a compelling metric that could be applied in other localities across the US. As the city potentially works to accelerate their progress in emissions and pollution reduction, the health of its residents should serve as a central motive for improvement.

Research Directions:

From the CSGT and the New York CDG program one can glean that renewable energy interventions should be executed with attention to both aspects of environmental justice. While the CDG process did include meaningful involvement for marginalized communities at first, the decision to ignore their input undermined the point of engaging them at all. Fair treatment is impossible without first addressing the community’s sensitivities. The responsibility to engage and fulfill these needs ultimately falls on the government, who has the necessary resources and research capability. More attention should be devoted to determining market interventions that quantify environmental justice impacts and further discount energy costs. Researchers should focus on expanding the capacity of community energy programs to serve more households at a time. The San Diego ATP framework’s targeting of areas with notable levels of negative health outcomes is a sound and tangible way to ensure environmental justice remains a priority. As ATPs and other interventions expand, the challenge of establishing direct linkages between specific programs and specific health benefits can pose an obstacle to their proliferation. To confront this challenge, city governments should prioritize robust research infrastructure and diligent monitoring of health impacts.

Conclusion:

In conclusion, energy transition for energy and transportation systems is necessary not only to reduce air pollution and other negative environmental trends, but also to mitigate the health risks that air pollution creates. It is especially important to confer the co-benefits of energy transition onto marginalized communities due to the historic injustices they have faced. However, there are multiple barriers to realizing environmental justice through energy transition. This paper provided case studies of programs that attempt to transform the energy and transportation systems for low-income and marginalized communities. From an equity standpoint, it is important that programs addressing marginalized communities make clear the health benefits that accompany the promotion of renewable energy and active transportation. Programs must also confer those benefits without introducing new or undue burdens that will exacerbate their disadvantage. If this is accomplished successfully, the resulting reduction of cardiovascular and respiratory disease, asthma, mental illness, obesity and mortality will greatly improve the livelihoods of marginalized people and the environment that surrounds them.

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Cura Terra

The Indigenous People of Virunga National Park: at the Crossroads of Civil War, Green Militarization, and Civilian Agency

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Abstract: Militarized conservation efforts for protected areas that are situated in regions where civil war is ongoing have gained critical academic attention in recent years. Specifically, strategies such as fortress conservation through armed park rangers have faced strong criticism for their harmful impacts on both Indigenous and non-Indigenous civilians, while also insufficiently protecting the environment. Recent literature regarding the impact of green militarization on civilians has failed to address both exactly why conservation efforts need to include them, and how they may be engaged in regions where there is ongoing instability and violence from civil war. Using Virunga National Park in the Democratic Republic of the Congo as a case study, this paper first outlines why the park is at the epicenter of the conflict due to its precarious location close to the border of Uganda and Rwanda, alongside its resource wealth, which is incredibly appealing to rebels, the government, and foreign actors. Using existing literature, the paper then explores the impact of militarized conservation on civilians living in Virunga. Based on existing literature about civilian agency, the paper subsequently argues that civilians living in and adjacent to Virunga must be understood as key actors who can demonstrate civilian agency, while also being instrumental to the development of successful conservation and tourism efforts. As a result, adapting how Virunga National Park staff engage with its local communities by centering their needs alongside those of the park would be mutually beneficial for the park rangers, tourism, and long-term stabilization strategies.

Introduction:

Virunga National Park should be a haven for wildlife: established in the Democratic Republic of the Congo's Albertine Rift Valley, it is home to diverse and rare flora and fauna. Mountain gorillas, chimpanzees, okapi, golden monkeys, elephants, leopards, and pangolins roam the protected area through wetlands, grasslands, tropical forests, and vast mountains (Parc National des Virunga, 2022). Situated on the border to Uganda and Rwanda, however, Virunga National Park has been the site of ongoing intense conflict for over 25 years. Tensions mounted in 1994, when the Rwandan Genocide led to an estimated 1.5-2 million (majority Hutu) refugees

settling in eastern Congo, and in 1996 Rwanda and Uganda invaded eastern Zaire to root out Hutu perpetrators of the genocide, beginning the First Congo War (Eastern Congo Initiative,

2022). Continued conflict led to the Second Congo War (1998-2003), in which over nine African states fought (Thompson, 2019). In 1999, the United Nations deployed its peacekeeping mission MONUC (MONUSCO since 2010). Despite this deployment of MONUC, conflict has continued to the present day, with over 120 groups actively fighting in the northeastern DRC. The conflict is sustained in part by the DRC's massive mineral wealth, including abundances of coltan, cobalt, tantalum, and oil, which leads to illegal mining in protected areas like Virunga National Park. Although not an active driver of conflict, rebel groups finance themselves through control of mines and roadblocks (Schotten, 2018). Groups like M23 and Mai-Mai are also interested in Virunga National Park, due to its natural resources and central location. This paper will focus on the contemporary conflict, due to armed groups' reliance on natural resources and continued interest in Virunga National Park.

Even prior to this conflict, Virunga National Park is known for having used aggressive and violent strategies to protect the park from unauthorized human contact, including against those Indigenous to it. Virunga National Park is Africa's oldest national park, originally founded in 1925 by Belgium's King Albert I as Albert National Park. Colonial powers used fortress conservation, which is based on the belief that wildlife is best preserved when isolated from human contact (Brockington, 2022). Using fortress conservation has meant the removal of Indigenous people, refugees, and other civilians from the land. This method of using armed park rangers to enforce environmental protection is known as 'green' militarization.

Many different communities make up the people of Virunga National Park, including Rwandan and Congolese refugees and displaced people, Indigenous communities, and other local civilians. In the mid-nineties, high numbers of refugees entered the park, with a peak of 850,000 living in the park in 1994, resulting in the deforestation of approximately 300km² of land due to cultivating food and logging for firewood (McNeely, 2003, p. 142–52). Additionally, there are communities Indigenous to the area controlled by Virunga National Park. The term Batwa encompasses several different hunter-gatherer communities in the DRC, including the Bambuti communities (also known as Mbuti), who can be found in the northeastern DRC. One key difference between the Bambuti and the Batwa is that the former generally maintained their semi-nomadic traditional lifestyle, while the latter are more settled and work as land cultivators (World Directory of Minorities and Indigenous Peoples, 2022). Thus, the Bambuti are heavily reliant on Virunga National Park for its resources and social and spiritual value, which is exacerbated by having almost no access to alternative resources. For the purpose of this paper, all civilians living in or near Virunga National Park will be discussed as many challenges faced are shared by Indigenous and non-Indigenous civilians. Due to the colonial history of the conservation methods discussed, however, additional focus will be given to Indigenous groups like the Bambuti, as they have suffered great levels of displacement and harm by the founding and running of the park.

Dependence on natural resources has caused the local and Indigenous communities to continue utilizing the park, when possible, despite violent repercussions from rangers. Civil society organizations have documented some of the crimes against civilians by park rangers through news articles and reports. These include the forced removal of Indigenous communities from their land, and facing violence and legal repercussions when trying to re-enter their lost homeland (Moloo, 2016). Despite these reports though, there is limited academic research focusing on the intersections of armed conservation, the impacts on local civilians, and their

civilian agency, or an individual's capacity to engage with and shape the circumstances of violent contexts they are in. Studying the agency of civilians has become an increasing focal point in research regarding civil wars since Stathis Kalyvas' argument that armed actors and civilians jointly produce violence and that civilian actions can shape the type and level of civilian victimization experienced (Kalyvas, 2006). This concept should be applied to Indigenous and other communities who are simultaneously affected by ongoing conflict and armed conservation, alongside removal from their ancestral lands. The importance of understanding civilian agency, dynamics, and protective strategies in situations of conflict will allow for more sustainable, peaceful, and effective engagement between the park and local communities. Furthermore, the complex relationship between the exploitation of natural resources, conflict, insurgent mobilization, and green militarization projects in Virunga National Park have received academic attention (Marijnen & Verwijen, 2016, p. 274-285). This paper will add to this existing literature by arguing that colonial conservation methods harm civilians and do not account for their agency and that instead, park protection efforts must engage with local communities in a mutually beneficial manner through revised and sustainable conservation methods.

Colonial legacies: the foundations of popular conservation methods:

In recent years, and especially following the release of the documentary *Virunga* in 2014, sharp criticism from human rights organizations has been directed at the park's use of colonial conservation methods, such as armed guards and fortress conservation (green militarization) (Von Einsiedel, 2014, p.274-285). This method of conservation is criticized for its foundation in colonial militarization of protected areas, for example, Virunga National Park has been militarized since colonial times by Belgian forces (Marijnen, 2018, p. 790-814). Today, strict conservation laws are carried out by the Institut Congolais pour la Conservation de la Nature (ICCN), despite much research having highlighted the flaws of this approach, and its harmful impact on local and Indigenous populations. This has led to rangers shooting and killing civilians entering the park, which poses a particularly high threat against the Indigenous Bambuti since they are reliant on the park for survival (Moloo, 2016).

Virunga National Park's aggressive conservation strategies have been exacerbated by the ongoing civil conflict, which in turn, have been used to justify their use (Moloo, 2016). These justifications include the killing of over 200 park rangers in the past 25 years in Virunga National Park, alongside the wildlife decreasing in abundance as a result of conflict, poaching, and other human interactions (Kalpers et al., 2003, p. 326–37). Additionally, in 2014, the park's chief warden, Emmanuel de Merode, was ambushed and shot by an unknown group, while in 2021, Luca Attanasio, the Italian Ambassador to the DRC, was killed while traveling on the park's southern border (Howard, 2014; BBC News, 2021). These incidents alongside the ongoing conflict complicate the successful running of the park, and have contributed to the intense use of armed conservation efforts, such as currently employing over 650 armed guards (Verweijen & Marijne, 2021). Strict enforcement of aggressive conservation laws, however, have been shown to exacerbate, rather than mitigate, the dynamics that fuel the need for armed mobilization in the park, specifically by building distrust between the park rangers and civilian populations (Verweijen & Marijne, 2018, p. 300-320).

Areas protected through these militarized strategies are paradoxically known as peace parks, despite unsuccessfully protecting the wildlife from conflict and crime (Trogisch, 2021, p.95). This labeling provides an avenue for strategic marketing in the West, which is crucial to the

funding and maintaining of these conservation strategies. A UNESCO world heritage site since 1979, the park is currently managed by a public-private partnership between the National Park Authority of the DRC (ICCN) and the EU funded Virunga Foundation. Due to the park being sponsored by Western sources and its main source of tourism stemming from the West, Virunga's official website was only available in English until 2015, when French was added (Marijnen & Verwijen, 2016, p. 274-285). This has led to local people seeing the park as "created for the white man by the white man" (Baaz et al., 2015). Again, this depicts Western control over the park. Barriers created by language excluded local and Indigenous communities from being involved in the park's online presence and from taking pride in its international fame through information released on its website. This exclusion of Indigenous communities from Virunga National Park has been overlooked by the mainstream media too. For example, the 2014 documentary *Virunga* does not discuss the park's current and historical contributions to the suffering of Indigenous communities (Von Einsiedel, 2014).

Virunga National Park as a fortress of inaccessible resources:

Virunga National Park is most famous for the diversity and richness of the flora and fauna found within its borders, especially its population of Mountain Gorillas. One third of the world's population of these protected and rare primates live in Virunga National Park. Beneath the surface, however, the park contains valuable resources too, which have captured the attention of foreign actors. Attempts to drill in the park for oil have been ongoing since the 2000s, although chief warden Emmanuel de Merode and other park staff have continued to fight against this through legal battles and international campaigns. Drilling for oil would require seismic tests, logging, and the laying of extensive pipelines, thus significantly disrupting the wildlife. The most infamous case of these efforts was by the British oil company, Soco International, which received attention through the documentary *Virunga*, bringing international awareness to the park (Von Einsiedel, 2014). Following scandals of racism, intimidation tactics and corruption with rebel groups, Soco International left Virunga for other ventures. Despite this, new threats have continued to emerge through comparable companies which continue to bid for governmental acceptance to commence drilling.

Militant groups like M23, ADF, Mai-Mai, and CODECO also complicate conservation of Virunga National Park. Estimations suggest that twelve distinct militia groups are operating within the park's boundaries (Schiffman, 2016, p.38-39). These groups participate in major resource extraction activities, such as fishing on the park's Lake Edward, producing approximately \$35 million in profit annually (Schiffman, 2016, p.38-39). It is also estimated that similar income is obtained in total from land clearance for agriculture, and charcoal production. Rebel groups do not only challenge park conservation through these undercover activities, though. More recently, Mai-Mai rebels killed six park rangers while on foot patrol in 2021, and M23 rebels attacked a base camp near the village of Bukima (Gouby, 2022). In 2022, M23 rebels attacked Virunga National Park's hydroelectric power work site (Parc National des Virunga, 2022). The project to build 8 hydroelectric power plants outside of the park premises aims to bring 60,000-100,000 jobs to the area, as well as business opportunities to help the community develop (Schiffman, 2016, p.38-39). This would allow local populations (70% of which are unemployed) to prosper from park-led initiatives. Rebel group interference with park staff and infrastructure adds to the conflict dynamic, exacerbating tension and increasing green

militarization. In turn, the heavily armed park rangers harm the civilians entering the park boundaries without authorization.

The land controlled by Virunga National Park is also rich for Indigenous communities. The Bambuti rely on the park for their industry (logging wood and selling it in Goma), medicine (traditional knowledge utilizing plants), and food (fishing zones, grazing, and hunting grounds). Additionally, the land holds strong spiritual value, with many places of worship and rituals in the park's territory (Baaz et al., 2015). Some community leaders have begun to share worries that traditional knowledge on plants and medicines is no longer being passed down the generations due to a lack of park access (Moloo, 2016). Despite no authorized access to Virunga, many Indigenous communities continue to rely on the park's resources for survival, albeit risking their lives in the process. This is a nationwide trend: across the DRC, reliance on natural resources has increased after the collapse of transport systems due to the conflict, as bushmeat now forms 80% of the protein consumed, and 80% of energy consumption stems from collected fuel wood (Draulans et al., 2002, p.37).

Alongside ongoing threats from civil conflict, aggression from park rangers, and displacement from their ancestral homelands, the Bambuti face discrimination from the government and the ICCN. Currently, there is no legal protection for the land rights of Indigenous people in the DRC's constitution (neither in the 1973 land law nor in the 2002 Forestry Code), despite its vote in 2007 to adopt the UN Declaration on the Rights of Indigenous People (Foyer de Développement pour l'Autopromotion des Pygmées et Indigènes Défavorisés, 2014). Racist tropes employed by the ICCN are represented by Norbert Mushenzi, the deputy director of Virunga National Park. Mushenzi stated that the Bambuti have an "intellectual deficiency," and that they can benefit from the park by "sell[ing] their cultural products and dances to tourists" (Moloo, 2016). Discriminatory comparisons of the Bambuti are also drawn against other ethnic groups, such as the favored Bantu communities. These factors combine to cause the Bambuti social, legal, and institutional discrimination.

Elevated levels of poverty continue to plague the communities living adjacent to Virunga National Park and have increased reliance on resources like water and food collection, logging, and hunting small animals. The latter is referred to as 'poaching' in conservation law, despite its impact being minimal and generally being carried out by unarmed locals using hand-built snares (Trogisch, 2021). Legal punishment for poaching can include public exposure, humiliation in front of family, children, and the community, or imprisonment, and while not legalized yet but governmentally supported (such as by Ugandan President Museveni), repercussions can also include shoot-to-kill policies (Trogisch, 2021). Cases of such violence against local and Indigenous people have been documented by non-governmental organizations, civil service organizations, and independent news reporters. For example, the International Women's Media Foundation released an article covering the abuse against the Bambuti and documented the murder of a Bambuti man. He had been foraging for honey in the Virunga National Park, and his body was later found cut up by a machete (Moloo, 2016). These issues are not unique to Virunga National Park: Minority Rights International have noted similar crimes and violations of human rights against Indigenous Batwa by park rangers in the Kahuzi-Biega National Park (Minority Rights International, 2020).

Current solutions through civilian agency-affirming methods of conservation:

Understanding the actions of civilian communities in the face of conflict from armed groups, including both rebel groups and park rangers, illuminates civilian protective agency. Civilian protective agency refers to the actions carried out by civilians “to avoid, mitigate or thwart violence by armed groups” (Baines & Paddon Rhoads, 2012, p.231-247). In times of war,

civilians have been known to work in their fields at night to avoid harassment, and those situated near national parks in the DRC have fled into the forest when the threat from soldiers or the pressure from other refugees became too high (Draulans et al., 2002, 37). Once refuge has been sought in the forest, civilians feed themselves through hunting and foraging, using traps or traditional methods like bows and poisoned arrows. Despite acting out of necessity, civilians have shown awareness for the environmental impact of their actions, specifically regarding short term mining and consuming bushmeat. Recent studies have shown that civilians would choose domestic meats over bushmeat if available, noting the decline of local wildlife, and that they would prefer other opportunities over short-term mining (Spira et al., 2019, p. 136–44). As a result, suggestions have been made that improving access to alternative meat sources and providing professional alternatives to mining would aid both local people and the environment (Spira et al., 2019, p. 136–44). Due to ongoing conflict, these self-protective strategies are still in use today. Understanding current survival methods is key to engineering and implementing sustainable strategies in the future; a field requiring extensive further research.

Current conservation policies do not align with Indigenous peoples’ self-protective strategies. Moreover, they harm local communities, the wildlife, and although often overlooked, are also damaging socially and psychologically for park rangers. Park rangers become the implementers and leaders of green militarization, conducting the park’s objectives, and creating conflict with local populations. Rangers have admitted to suffering from their actions against local people, such as facing social exclusion from the community (Trogisch, 2021, p. 100). This has led to suggestions for more nuanced research on the impact of conservation methods on the emotional realities of those delivering these practices. Thus, the perspective of rangers needs to be included in discussions of improving and de-escalating the violence of future conservation strategies (Trogisch, 2021, p. 101). Furthermore, a solution to transcend the Indigenous vs park ranger binary would be to hire the Bambuti as park rangers. The Forest People’s Program suggested this initiative, as the Bambuti are currently excluded from careers in the park due to the educational requirements of being a ranger, such as obtaining a diploma. This would integrate the Bambuti back into the park, provide economic stability, and allow the park to gain their extensive knowledge on the flora and fauna. Focusing on improving the training of new junior park rangers has shown to positively impact conservation efforts that are facing pressure from external armed conflict too, as park rangers are more likely to remain in their role during unstable times (Plumptre, 2008, p. 69-88). Regarding the marketing of the park, this would be an unorthodox way of conserving land that would likely sell well in the West, where many people are starting to recognize and support indigenous rights.

Furthermore, Indigenous communities require reparations, inclusion, and legal protection. Some efforts on this issue have been made for comparative communities, like the Batwa who are indigenous to the land controlled by the Kahuzi-Biega National Park. In 2010, the NGO Environment, Natural Resources and Development partnered with the Rainforest Foundation Norway to file a legal complaint for the Batwa, to receive compensation for stolen land (Moloo,

2016). The case has remained at the Supreme Court in Kinshasa, and following a lack of action, the complaint was filed again to the African Commission of Human and People's Rights, although this has also not led to any significant action. In Virunga National Park, there have been attempts to implement legal protection too, although the process has been stalled since 2014 (Moloo, 2016). Although not a functional solution in the DRC currently, obtaining greater legal representation and protection could be a contributing solution to improving the lives of Indigenous people affected by colonial conservation strategies.

Tourism too, can contribute to peacebuilding and agency-affirming stabilization strategies, as in the case of Rwanda, where tourism has developed socio-economic foundations and security (Alluri, 2009, p. 16). Specifically, tourism in Rwanda has shown to be effective in developing inclusive business models, reconstructing infrastructure, creating employment, and supporting women's initiatives (Alluri, 2009, p. 16). Comparative examples stem from Uganda too, where the Volcano Safaris business collaborated with architects and the Indigenous Batwa to restore a village they were originally displaced from, near the Mgahinga Gorilla National Park (Waldek, 2022). This project however, included teaching the Batwa new ways of life like farming and construction, rather than allowing them to return to their traditional ways of life. The project created the Batwa Cultural Heritage Site, which provides opportunities for tourists to learn about the Batwa's traditional ways of life, such as "how they used to live, hunt, and collect honey and other resources" (Waldek, 2022). This implies that the community plays a performative role for tourists, rather than providing them with the autonomy and independence to continue living their traditional lives. Additionally, it is difficult to determine Batwa perspectives on the project, which forms a crucial avenue for future research. Despite this, the project does provide an example of collaborating with Indigenous communities rather than excluding them from the benefits of the park, and the economic opportunities created through tourism.

Conclusion:

The violations of rights against indigenous civilians are overlooked by mainstream media covering Virunga National Park, as depicted by the documentary *Virunga*, which makes no mention of the Bambuti who continue to suffer from the park's aggressive strategies (Von Einsiedel, 2014). Moreover, the harmful impacts on Indigenous communities by conservation strategies in regions of ongoing conflict are particularly important avenues for research because other parks in the region encounter similar issues. The Rwenzori Mountains National Park, Maiko National Park, Okapi Wildlife Reserve, Kahuzi-Biega National Park, and Mgahinga Gorilla National Park are all home to Indigenous and non-Indigenous communities, civil conflict, and aggressive conservation strategies. For example, Batwa communities in Kahuzi-Biega National Park face severe violence and harm from human rights abuses carried out by park rangers, such as in July 2019, when an undocumented number of Batwa civilians were killed and displaced (Luoma, 2022). Hence, understanding the impact of armed civil conflict and green militarization on Indigenous communities is integral to building stability and ensuring sustainable conservation methods are used by national parks.

Analyzing civilian agency is central to developing a sustainable future for local and Indigenous people across all national parks situated in regions of civil conflict. Specifically, considering the agency of civilians will help develop strategies that include Indigenous peoples' previous protective actions, their current interest and spiritual values in the land, and the roles they want to participate in within the park. These may conflict with current methods of environmental

protection like fortress conservation, creating an avenue for future research focusing on how sustainable engagement with Indigenous people on park grounds will function, while successfully conserving the flora and fauna. This also gives rise to policy implications, as further research will be required to determine exactly how civilians need to be incorporated into environmental law.

As first theorized by Stathis Kalyvas, civilian actions can and will shape the type and level of civilian victimization, and in the case of Virunga National Park, the local populations must be incorporated by park staff, law makers, and international funders as key actors shaping their engagement with the park. Utilizing a ‘bottom-up’ approach in future research by focusing on civilian agency is not a singular solution for the plight of civilians harmed by the park. Rather, it is one of many approaches required to uplift communities, alongside legal, financial and policy support, human rights-based work, and others. Environmental conservation can occur through agency affirming methods that incorporate local and Indigenous people, but it will require future research on the connections between the ongoing civil war, the park infrastructure and rangers, and civilian and Indigenous dynamics.

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