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Decolonization & the Politics of Climate Change: The Cases of Brazil, Pakistan, and Indonesia

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Decolonization & the Politics of Climate Change: The Cases of
Brazil, Pakistan, and Indonesia

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ABSTRACT

In recent years, climate change has gone from a distant threat to an imminent reality. Many countries around the world are being impacted by climate change in different ways. However, decolonized countries are having more difficulty adjusting to and addressing climate change related problems, and these are being compounded by their sociopolitical and economic problems. In Brazil, the deforestation of the Amazon for the sake of agro-extractive capitalism has both accelerated climate change and expelled the Amazonian indigenous inhabitants. In Pakistan, conflict with India has made cooperation with water-sharing agreements in an already water-scarce environment even less likely. In Jakarta, Indonesia, infrastructure created during the colonial era has accelerated land subsidence, and, in combination with rising sea levels, has begun to inundate the entire city. While individual action is important, the most potent actions that can be taken to mitigate climate change are those by governments and corporations.

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INTRODUCTION

I chose to write about climate change because it is not only something that I am very passionate about but also something that prompts a great deal of anxiety in me. As a member of Generation Z, I have never lived in a time where climate change was not a reality. I attended several climate marches during my adolescence.

However, it wouldn't be until my freshman year of college that I would develop a genuine sense of climate anxiety. For my Composition II class, we had to write a paper on a subject that we were passionate about. I chose to write about climate change because it was a topic I was interested in; however, the more research I did on the subject, the more anxious I became. When I had finished writing my paper, I was an emotional wreck. But I was also inspired, and determined to make a change. Being that I was already an International Studies major and was content with what I was studying, I chose to minor in Environmental Studies; this is what ultimately inspired the subject of my thesis. My passion for the topic and my knowledge of both international and environmental studies proved useful for conducting this research

METHODOLOGY

One thing I wanted to emphasize with this thesis is the far-reaching, all-encompassing nature of climate change. I chose to conduct case studies from three different regions around the world to be able to call attention to the way that climate change will affect people everywhere, in many different ways depending on their biome. I also wanted to call attention to the way that the political landscape and historical legacy of each country affects their ability to recognize and respond to climate change.

I drew much of my research from academic journals. I also drew a large quantity of my research from news articles, as, with much of the information I studied, it referred to recent events that do not have an expansive array of literature. Conversely, there were also topics for which there is such an expansive array of literature (such as the science behind climate change) that it was difficult to discern which sources were relevant and which sources were superfluous.

I will first provide a background on climate change and colonization as a whole. Then, I will provide background on the history of colonization within these countries. Afterwards, I will analyze the way that climate change is taking place in these case study countries, and how their experience with and response to climate change is affected by their post-colonial legacy. Last, I will explore the ways in which these countries are already responding to climate change, and I will explore potential solutions to these problems that have either already been invented and implemented in another location, are in the process of being developed, or have existed all along. While there is no one panacea to address the extreme gravity of climate change, we must respond in every way possible in order to secure a chance of survival for generations to come

BACKGROUND

In order to begin my research, I was inspired by a few different sources on the subject. The first source that sparked my interest in the topic was *Tropic of Chaos* by Christian Parenti; in this book, Parenti details the catastrophic convergence of climate change and violence, going region by region providing examples that are relevant on a macro level. One major point that Parenti makes that I tried to incorporate into my thesis is the idea of failed states; how decolonized states never really had a chance. After years and years of dealing with economic, environmental, and often human exploitation, combined with the power vacuum that often forms as a result of a hasty transition of power without the foundation of a proper, strong centralized government, decolonized states are seemingly destined to fail without economic intervention by external sources such as the International Monetary Fund. As a result, these states are often afflicted with the “breakdown of social coherence on an extensive level as civil society can no longer create, aggregate, and articulate the supports and demands that are the foundations of the state. Without the state, society breaks down and without social structure, the state cannot survive.”¹ As the state fails, a sufficient response to climate change-related disasters becomes less likely; in fact, climate change exacerbates existing tensions related to state failure. It truly reads like a fiction novel, giving intimate details of the experiences of victims of climate change-related violence, while also providing excellent background into the political theorization of failed states and climate change. I especially appreciated the focus on the disproportionate nature of catastrophic convergence in developing countries and failing states. Another piece of literature that provided inspiration for my thesis is *What Every Environmentalist Needs to Know About Capitalism* by Fred Magdoff and John Bellamy Foster. This book discusses climate

¹ Christian Parenti. *Tropic of Chaos*, (Bold Type Books, New York, NY, 2011) p. 85

change from the perspective of an economist and an anticapitalist and details all the ways that capitalism and environmentalism are essentially incompatible. It is the single most convincing piece of literature on climate change that I have read in this research process and is the first book that I would refer to a climate-change denier or proponent of green capitalism. Last, a book that inspired a deep-seated sense of dread, but also a determination to do everything in my power to address climate change, was *The Uninhabitable Earth* by David Wallace-Wells. The book takes a relatively pessimistic outlook on climate change, but this kind of outlook might just be what we need to scare people out of complacency.

BACKGROUND ON CLIMATE CHANGE

The Earth's climate has always been changing. Geological epochs that last millions of years are punctuated by mass extinction events (5 to be exact). The popular belief is that many of these mass extinction events were caused by one single catastrophic event, such as an asteroid. While this true for a few different epochs, most epochs were caused by a change in the climate, sparked by a dramatic geological event like volcanic eruptions². By looking back to the epochs of the past, we can place the changing climate of today into context.

While the climate has always been changing, it has never changed at such a rapid rate. As stated by David Wallace-Wells in *The Uninhabitable Earth*;

“The most notorious [mass extinction event that involved climate change produced by greenhouse gasses] was 250 million years ago; it began when carbon dioxide warmed the

² David Wallace-Wells. *The Uninhabitable Earth* (Tim Duggan Books, New York, NY, 2019)

planet by five degrees... We are currently adding carbon to the atmosphere at a considerably faster rate; by most estimates, at least ten times faster. The rate is one hundred times faster than at any point in human history before the beginning of industrialization.”³

Given that the Earth has never witnessed an epoch in which carbon emissions have risen this much, this suddenly, this is no small fact.

It is easy to point fingers to the beginning of industrialization as the marker for this new catastrophic climate event. While the events that unfolded as a result of industrialization (an exponentially-expanding global economy, based on profits, rather than need⁴, and mass consumerism) certainly put the gears of mass extinction in motion, according to *The Uninhabitable Earth*, “more than half the carbon exhaled into the atmosphere by the burning of fossil fuels has been emitted in just the past three decades”⁵.

The effect of human activity on the earth’s climate is so dramatic that some scientists now believe we are entering an entirely new epoch; the anthropocene. The anthropocene is an “unofficial unit in geologic time, delineating the time when human activity began to have an effect on the earth’s climate and processes”, according to the National Geographic Society⁶.

As far back as the 1800s, scientists theorized about the greenhouse effect; they realized that solar energy insulated by the earth’s atmosphere is what maintains the earth’s temperature, allowing life to take place. Research on the effect of greenhouse gasses began 50 years later, when Eunice Foote realized that carbon dioxide had the greatest warming effect on surface

³ David Wallace-Wells. *The Uninhabitable Earth* (Tim Duggan Books, New York, NY, 2019) p. 4

⁴ Fred Magdoff, John Bellamy Foster. *What Every Environmentalist Needs to Know About Capitalism* (Monthly Review Press, New York, NY, 2011) p. 132

⁵ David Wallace-Wells. *The Uninhabitable Earth* (Tim Duggan Books, New York, NY, 2019) p. 43

⁶ Tyson Brown. *Anthropocene* (National Geographic Society, May 20, 2022)

temperature. As an amateur female scientist, she would never be recognized for her work in her lifetime, and her work would be overshadowed by that of John Tyndall.

In the 1930s, British engineer Guy Stewart Callendar proposed the idea that carbon emissions could have a destabilizing effect on the earth's climate⁷.

The closest we ever came to a formidable response to climate change took place in 1979. By this point, many scientists had already begun expressing concern about the effect man-made carbon emissions were having on the atmosphere. Political leaders worldwide came to consensus that climate change was happening, and that we needed to act. According to Nathaniel Rich of the New York Times;

“The world’s major powers came within several signatures of endorsing a binding, global framework to reduce carbon emissions — far closer than we’ve come since. During those years, the conditions for success could not have been more favorable. The obstacles we blame for our current inaction had yet to emerge. Almost nothing stood in our way — nothing except ourselves...A broad international consensus had settled on a solution: a global treaty to curb carbon emissions...Delegates from more than 60 nations attended, with the goal of establishing a global summit meeting to be held about a year later.

Among scientists and world leaders, the sentiment was unanimous: Action had to be taken, and the United States would need to lead. It didn't.”⁸

In order to investigate climate change and its culpability in the crisis, Exxon-Mobil, one of the largest oil and gas conglomerates in the world, employed scientists to research. It launched an ambitious program, spending over a million dollars to investigate the way carbon dioxide is

⁷ History.com Editors. “Climate Change History” (History.com, 2022)

⁸ Nathaniel Rich, “Losing Earth: The Decade We Almost Stopped Climate Change” (New York Times, New York, NY, August 2018)

absorbed by the ocean. When the scientists unequivocally concluded that man-made carbon emissions caused by the burning of fossil fuels were having a warming effect, and that continuing business-as-usual would lead to at least 3C degrees of warming, Exxon remained “publicly convinced that the issue was controversial”⁹. They knew that, if word of the effect of burning fossil-fuels on the planet became consensus, they would lose millions, if not billions of dollars. So in 1989, they spent even more money to build a campaign called “Global Climate Coalition”. Up until the organization was disbanded in 2002, the campaign spent millions of dollars to undermine the scientific research to support the idea of man-made climate change. It even went so far as to block the US from signing an international climate treaty called the Kyoto protocol, rendering it useless¹⁰. To this day, Exxon-mobil continues to run greenwashing campaigns, claiming to be more focused on carbon-capturing and biofuel technology than they actually are, all while continuing to focus their efforts on expanding fossil fuel mining¹¹.

Another insidious fact about climate change, and perhaps the fact most pertinent to my thesis, is that just *one hundred companies* are responsible for *seventy one percent* of greenhouse gas emissions since 1988¹². The majority of these corporations are fossil fuel manufacturers. This means that, while the average consumer worries about their meat consumption, driving of cars, use of plastic, et cetera, corporations are continuing to dump seemingly endless amounts of carbon and other potent greenhouse gasses into the atmosphere, teetering the balance on an already unstable climate.

⁹ Shannon Hall. “Exxon Knew about Climate Change almost 40 years ago” (Scientific American, New York, NY, 2015)

¹⁰ Shannon Hall. “Exxon Knew about Climate Change almost 40 years ago” (Scientific American, New York, NY 2015)

¹¹ ClientEarth, “The Greenwashing Files: ExxonMobil” (ClientEarth 2022, London, UK)

¹² Tess Riley, “Just 100 companies responsible for 71% of global emissions, study says” (The Guardian, London, UK 2017),

On the other hand, while no single individual will be spared from the consequences of climate change, the people least responsible for carbon emissions are the ones that are being hit the hardest¹³.

COLONIZATION IN THE MODERN DAY

While the majority of formerly colonized countries have achieved independence, colonization still exists today; rather than existing in the form of countries claiming entire swaths of already inhabited land in the name of their crown, colonization in the modern day takes the form of corporations in developed nations outsourcing their manufacturing to less developed countries, many of which are formerly colonized states. While one could argue that this foreign investment benefits the economies of the countries where the manufacturing is being outsourced to, many of these countries have lax workers rights laws, and lax environmental protection laws for manufacturing. Employees in these sweatshops often work hundred hour weeks, in extreme heat and cold, for a little over \$1 a day. These factories also generate countless amounts of toxic pollutants and carbon emissions through their manufacturing process¹⁴. We have developed a culture of consumerism that encourages overproduction and overconsumption. According to Fred Magdoff and John Bellamy Foster in *What Every Environmentalist Needs to Know About Climate Change*;

“Our enormously productive economy demands that we make consumption our way of life, that we convert the buying and use of goods into rituals, that we seek spiritual

¹³ Clément Fournier, “The People Least Responsible For Global Warming Will Suffer The Most From Its Consequences” (YouMatter, Paris, France, 2020)

¹⁴ Sofia Penttila. “The Dangers of Sweatshops” (Voyagers, 2020)

satisfactions, our ego satisfactions, in consumption. The measure of social status, of social acceptance, of prestige, is now to be found in our consumptive patterns.”¹⁵

Consumerism has epitomized our way of life; our holidays, and our forms of social interaction are all predicated on buying and spending more. The ultimate modern culmination of consumerism is the creation of fast fashion companies like Shein, an online retailer that adds thousands of new products to its website every day, each only costing a couple of dollars; however, these products are very cheaply made and do not last long. Workers are also often only paid a few cents a garment and have harsh penalties for minor mistakes¹⁶. But the companies’ poor human rights record doesn’t disincentivize people from purchasing hundreds of dollars worth of items in a ‘haul’, and posting it on social media¹⁷. Shein is just one example of many companies that oversaturate the market with cheaply produced and quickly consumed items.

CLIMATE CHANGE IN THE MODERN DAY

With the signing of the Kyoto Protocol in 1997, two degrees celsius warming was considered an unthinkable catastrophic reality; with “flooded cities, crippling droughts, and heat waves a planet battered daily by hurricanes and monsoons we used to call ‘natural disasters’ but will soon normalize simply as bad weather”, according to Wallace-Wells¹⁸. While the protocol had bold ambitions for carbon emission reduction, it achieved virtually nothing. Then, in 2016, two degrees went from the unthinkable to reality; the Paris Climate Accords established two

¹⁵ Fred Magdoff, John Bellamy Foster. *What Every Environmentalist Needs to Know About Capitalism* (Monthly Review Press, New York, NY, 2011) p. 48

¹⁶ Jerren Gan. “Here’s Why You Should Never Shop at Shein No Matter What” (Medium, San Francisco, CA, 2021)

¹⁷ Roxane Aguilar. “Should we blame SheIn Haul on TikTok ?” (Favikon, Paris, France, 2022)

¹⁸ David Wallace-Wells. *The Uninhabitable Earth* (Tim Duggan Books, New York, NY, 2019) p. 9

degrees warming as the limit, preferably 1.5 degrees celsius¹⁹; As of 2021, only one nation is on track to limit its emissions to the 1.5 degree goal, the small West African country of Gambia²⁰.

¹⁹ UNFCCC. The Paris Agreement

²⁰ Clare Watson. "Only One Country Is on Track to Meet Its Climate Targets", Report Finds (ScienceAlert, Canberra, ASTL 2021)

BRAZIL

INTRODUCTION

The Amazon rainforest is often considered to be ‘the lungs of the earth’. Traditional perceptions of the Amazon consist of lush, dense forest filled with endless biodiversity, untouched by modern civilization. However, the current reality of the Amazon is far different; while the Amazon still sports more biodiversity than any other ecosystem in the world (excluding the ocean), 17% of the rainforest has already been lost to deforestation and development. Wildfires ravage the forest, generating an endless stream of carbon emissions and exacerbating climate change. This creates a climate that is increasingly destabilized; irregular weather patterns cause catastrophic drought, flooding, and wildfires. The Amazon has become fragile as a result, and scientists estimate that once we reach 20% forest loss, the damage will be irreversible²¹

BACKGROUND

In 1500, Brazil was colonized by the Portuguese. At first, it was established as a series of trading posts. However, they soon discovered the beautifully red-stained Brazilwood tree that grew in abundance along the coast and recognized its potential lucrativeness. It became a commodity in Europe for its distinctive coloring and the red ink it produced. However, like most commodified resources, it had to be extracted in a way that was simultaneously exploitative to the environment in which it was extracted, and to the labor force who had to perform the extraction. Chattel slavery soon became the dominant source for this labor, and thus the

²¹ Matt Sandy. “The Tipping Point” (Time Magazine, New York, NY, September 2019) p. 74

deforestation of the Amazon and subjugation of its indigenous inhabitants for the sake of profits got its start²²

As Brazilwood trees continued to be cut down, Portuguese colonizers discovered an even more lucrative crop that could be grown in its place; sugar. This crop required a lot of land and even more labor to farm it, so the demand for labor as well as centers of organization came to the fore. This labor came in the form of enslaved labor, of both African and Indigenous people. The organization of agriculture came in the form of Portuguese *engenhos*, or sugar processing mills, and Jesuit *aldeias*, or indigenous plantation labor re-education camps. Later, a formal colonial political structure emerged in the form of captaincies general, or land charters given to merchants, soldiers, sailors, and petty nobility so that the Portuguese crown could stake its claim in a land already being expanded by other European powers²³.

Colonists established relations with indigenous tribes, either allying with them against European powers, or other warring tribes. Often, prisoners of warring tribes were sold as slaves to European powers. Indigenous slaves were also captured through *Bandeirantes*; European colonizers would ‘civilize’ (or forcefully subjugate) indigenous people (and mixed race Afro-Europeans) to capture other indigenous people, who viewed the task as less demeaning than agriculture. This is where the disdain for the sake of indigenous people and other marginalized communities got its start. Eventually, gold was discovered in the region, which turned out to be a much more profitable export; the extraction of this resource was completed by settlers in the region hoping to strike it big, merchants, and peasants alike, and also through forced slave labor²⁴

²² James N. Green. “1.1 Brazilwood; Brazil: Five Centuries of Change” (Brown University, Providence, RI, 2012)

²³ James N. Green. “1.2 Feitorias and Engenhos: The Changing Economy of Colonial Brazil”; Brazil: Five Centuries of Change (Brown University, Providence, RI, 2012)

²⁴ James N. Green. “1.4 Bandeirantes, Natives, and Indigenous Slavery”; Brazil: Five Centuries of Change (Brown University, Providence, RI 2012)

Over the 500 years since their arrival in Brazil, the Portuguese settlers created a society of mixed-race individuals; a combination of Europeans (often forcefully subjugated) indigenous people and enslaved people from Africa. Eventually, slavery was banned by the 1880s²⁵. However, the effect it had on the antipathy to indigenous and black communities it created still persists to this day.

The Brazilian plantation economy remained in place even after slavery was banned. Agriculture continued to dominate the Brazilian economy, however, not without the destruction of the environment. Following WWII, Brazil followed a policy of import-substitution industrialization. The second half of the 20th century, a military dictatorship emerged in Brazil. With this military dictatorship came a series of policies focused on expansion, for the sake of profit, without environmental impact in mind. The military dictatorship also created a policy of state repression, which was met with a socialist guerilla counterinsurgency that has evolved into the modern gang Comando Vermelho.

MODERN DAY

Brazil's economic policies incentivized development and investment in agriculture. As a result, agricultural regions such as the Nordeste have become overdeveloped. Already a semi-arid climate, irregular climatic patterns and overdevelopment have exacerbated drought and flooding in the region. Due to this harsh climate, many farmers who depended on agriculture for their livelihoods were forced out of Nordeste into cities like Rio in search of work. Scientists predict that rapid warming in Brazil will exceed those already dire predictions for the rest of the world in the latter half this century, as well as very severe water shortage for the region²⁶. The

²⁵ James N. Green, "5.1 Racial Thought After Abolition"; *Brazil: Five Centuries of Change* (Brown University, Providence, RI, 2012)

²⁶ Christian Parenti. *Tropic of Chaos* (Bold Type Books, New York, NY, 2011) p. 159-73

Nordeste is just a preview of what will happen to the Amazon if unregulated agricultural development continues to take place. According to *the Tipping Point* by Matt Sandy “If, as predicted, global temperatures rise by 4°C, much of the central, eastern, and southern Amazon will certainly become barren scrubland.”²⁷

Indigenous experiences

The Karipuna tribe, who evolved from tribespeople who migrated to the region approximately 13,000 years ago, have long thrived in the forest, mindfully using its resources to their advantage. By nature of their need-based, as opposed to profit-based use of resources, they were able to coexist with the rainforest. However, since the time of Portuguese colonization, they have been increasingly pushed to the fringes. In addition to exposure to foreign European diseases causing mass death of the indigenous people of the region, contact and conflict with settlers has caused the population of indigenous people in the Amazon to dwindle²⁸.

The former President of Brazil, Jair Bolsonaro, made it clear that he would prioritize the interests of economic and agricultural expansion into the Amazon over the interests of the preservation of the forest and the lives of its indigenous inhabitants. Environmental and indigenous activists who attempted to protect the Amazon have been met with resistance, with some even winding up dead²⁹. One of the main sources of deforestation is clearing land for cattle farming. It is also important to note that the majority of beef manufactured in Brazil is not being consumed by Brazilians; rather it is being exported to China and the United States³⁰. The average Brazilian does not get to reap the benefits of the destruction of their environment. Despite the long-term consequences of the destruction of the Amazon, Brazil’s economic

²⁷ Matt Sandy, “The Tipping Point” (Time Magazine, New York, NY, September 2019) p. 74

²⁸ Matt Sandy, “The Tipping Point” (Time Magazine, New York, NY, September 2019)

²⁹ Matt Sandy. *The Tipping Point* (Time Magazine, New York, NY September 2019) p. 74-77

³⁰ T. Ozbun Brazil: beef and veal exports value 2021, by destination, 2022

difficulties have led the nation to prioritize economic growth over the survival of the Amazon, and ultimately the human race.

INDIA-PAKISTAN

INTRODUCTION

Nestled between the borders of India, Pakistan, and China is the region of Jammu and Kashmir. In the past half-century, the region has been hotly contested between the three nations, and has been a major source of conflict. One reason why this region is so heavily coveted is due to the extremely valued resources within the region; along with lush forests, mineral deposits, and massive glaciers, the region is also home to three rivers that are arguably the most important bodies of water in all of Southeast Asia; the Indus, the Jhelum, and the Chenab. They join to form one river that flows through Pakistan into the Arabian sea, nourishing the farmland that lies in between. Without this source of water, the region would essentially become a desert.³¹

Because of its highly coveted nature, the river has been the subject of international agreements between India and Pakistan. The Indus Water Treaty of 1960 has been an unlikely source of cooperation between the two warring nations, and for a while, it seemed to be working. However, in recent years, India has been cutting into Pakistan's share of water, an action that has dire consequences for the Punjab breadbasket³². Cooperation between the two countries is necessary to ensure that both countries have an adequate supply of water to support both of their ever-expanding populations, especially as climate change causes weather patterns to become increasingly unpredictable. However, continued violent conflict in the Kashmir region makes a peaceful settlement between the two nations ever more unlikely. In order to truly understand this conflict and all of its complexities, one must understand its origins in British colonization.

³¹ Christian Parenti. *Tropic of Chaos* (Bold Type Books, New York, NY, 2011) p. 124

³² Christian Parenti. *Tropic of Chaos* (Bold Type Books, New York, NY, 2011) p. 127

BACKGROUND

Prior to European colonization, the Indian subcontinent and its diverse inhabitants generally coexisted. A plethora of religious and ethnic identities existed across the continent, and people identified more with their regional identities than their religious ones. As stated by William Dalrymple in “The Mutual Genocide of Indian Partition”;

“India was...a place where traditions, languages, and cultures cut across religious groupings, and where people did not define themselves primarily through their religious faith. A Sunni Muslim weaver from Bengal would have had far more in common in his language, his outlook, and his fondness for fish with one of his Hindu colleagues than he would with a Karachi Shia or a Pashtun Sufi from the North-West Frontier.”³³.

Not only did citizens coexist, but religious and political officials acknowledged similarities between the two dominant religions, Hindu and Islam, and they generally existed in a state of mutual respect. According to Dalrymple, “In the seventeenth century, the Mughal crown prince Dara Shikoh had the Bhagavad Gita, perhaps the central text of Hinduism, translated into Persian, and composed a study of Hinduism and Islam, ‘The Mingling of Two Oceans,’ which stressed the affinities of the two faiths.” While not all Hindu and Muslim officials were this accepting, the two religions were *generally*³⁴ able to peacefully coexist³⁵. It was during the time of British colonization of India that religious division truly began to take place.

³³ William Dalrymple. “The Mutual Genocide of Indian Partition.” (The New Yorker, New York, NY, 22 June 2015)

³⁴ “The atrocities wrought by Dara’s bigoted and puritanical brother Aurangzeb have not been forgotten by Hindus” [Dalrymple]

³⁵ William Dalrymple. “The Mutual Genocide of Indian Partition.” (The New Yorker, New York, NY, 22 June 2015)

The British first entrusted colonization of India to the East India Company in the 1700s. Initially, the company installed itself in the subcontinent by receiving permission from local authorities to own land and conduct mutually beneficial trade. However, as the subcontinent continued to be coveted by colonial European powers, the EIC felt the need to enshrine its presence and power; it did this by overthrowing the nawab of Bengal in 1757 and installing a puppet. This power was consolidated when the EIC moved the administrative offices to Kolkata; at the same time, the British began to exert their power over the EIC with a series of acts that indirectly brought the Bengal region under control of the British. The British would continue to expand their control over the subcontinent through a series of treaties and wars, until most of the region was under the determination of the British government. The EIC went bankrupt due largely to corruption, and the British government was obligated to intervene³⁶. The EIC officially relinquished control of India following the disastrous Sepoy Mutiny of 1857³⁷, and the British officially took power with the Government of India Act of 1858³⁸

During the 19th century, the British government instituted policies that still affect religious and class relations in the Indian subcontinent to this day; According to Sanjoy Chakravorty in “How the British Reshaped India’s Caste System”, “Social categories of religion

³⁶ Brian Duignan. “5 Fast Facts About the East India Company” (Encyclopedia Britannica, Chicago, IL, US, July 2018)

³⁷ “In late March 1857 a sepoy (Indian soldier) in the employ of the East India Company named Mangal Pandey attacked British officers at the military garrison in Barrackpore. He was arrested and then executed by the British in early April. Later in April sepoy troopers at Meerut, having heard a rumor that they would have to bite cartridges that had been greased with the lard of pigs and cows (forbidden for consumption by Muslims and Hindus, respectively) to ready them for use in their new Enfield rifles, refused the cartridges. As punishment, they were given long prison terms, fettered, and put in jail. This punishment incensed their comrades, who rose on May 10, shot their British officers, and marched to Delhi, where there were no European troops. There the local sepoy garrison joined the Meerut men, and by nightfall the aged pensionary Mughal emperor Bahādur Shah II had been nominally restored to power by a tumultuous soldiery. The seizure of Delhi provided a focus and set the pattern for the whole mutiny, which then spread throughout northern India. With the exception of the Mughal emperor and his sons and Nana Sahib, the adopted son of the deposed Maratha peshwa, none of the important Indian princes joined the mutineers. The mutiny officially came to an end on July 8, 1859.”

³⁸ “British Raj.” Encyclopædia Britannica, Encyclopædia Britannica, Inc.

and caste as they are perceived in modern-day India were developed during the British colonial rule, at a time when information was scarce and the colonizer's power over information was absolute.” The colonists codified a list of acceptable religions indigenous to the subcontinent, as well as their ‘official texts’. They also legally enshrined the caste system, based on occupation and birth status. All of these laws would serve to support British colonial efforts to assert control over the region. They did this by consolidating land ownership from small farmers to large landowners into princely states, and appointing members of the Indian equivalent of the aristocracy to rule over these states³⁹.

Despite these appointments, however, people of different religions were generally able to coexist peacefully in princely states. However, this would all change with the haphazardly planned British partition

Partition

Following World War II, Britain was under enormous financial strain. They no longer had the means to assert control over the subcontinent, which for decades had already been wrought with anti-colonial movements of Indians against the British. Indian religious and political leaders all had differing views of a post-colonial India. The Hindu majority, made up of Mohandas Gandhi and Jawaharal Nehru, advocated for one, united India. On the other hand, Muhammad Ali Jinnah recognized the religious divide created by colonization, and thought coexistence between Hindus and Muslims would be too difficult; he advocated for a two-state solution, where Muslims would have a homeland of their own.

Due to both internal and external pressures caused by riots, the planning of partition was extremely rushed. In just forty days, British authorities drew the new borders, establishing East

³⁹ Sanjoy Chakravorty. “Viewpoint: How the British Reshaped India's Caste System.” (BBC News, BBC, London, UK 19 June 2019)

and West Pakistan. It used outdated census information, and nonsensical policies for designating whether a state would be part of Pakistan or India. According to “Why Was India Split Into Two Countries?” by Haimanti Roy;

“The border took into account where Hindus and Muslims were majorities, but also factors like location and population percentages. So if a Hindu majority area bordered another Hindu majority area, it would be included in India—but if a Hindu majority area bordered Muslim majority areas, it might become part of Pakistan. Princely states on the border had to choose which of the new nations to join, losing their sovereignty in the process.”⁴⁰

Residents of these princely states began migrating to where they expected their religious majority to exist. It was a calamity. Hindu refugees fled villages where their families had lived for centuries, expecting their states to become Muslim, and vice versa. Families were divided. Fearing sexual violence, families sent away women to places they thought they would be safe. Residents poured out of cities that were filled with refugees. The power-vacuum left by the departure of the British after nearly 3 centuries of colonial rule allowed radicalized militias to take power and massacre migrants. In the region of Punjab (which would become West Pakistan), most of the violence took place; women experienced the worst of it, with over 100,000 women kidnapped and forced to marry their captors, and many more raped and mutilated. East Pakistan ceded from its Western counterpart in 1971, resulting in even more violence. All in all, it is estimated that over 1 million people were killed in the violent aftermath of British partition

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⁴⁰ Haimanti Roy “Why Was India Split into Two Countries?” YouTube, Ted-Ed, 21 June 2021, <https://youtu.be/DrcCTgwbsjc>.

⁴¹ William Dalrymple. “The Mutual Genocide of Indian Partition.” (The New Yorker, New York, NY 22 June 2015)

With all of the senseless violence that took place, and continues to take place to this day, one must interrogate the circumstances that led to this violence. Perhaps, if the British hadn't divided India based on religion back in the 19th century, creating animosity between the major religions, a two-state 'solution' would've never had to take place.

INDONESIA

INTRODUCTION

In 2007, Jakarta, Indonesia was inundated with some of the worst floods it had seen in 50 years. Heavy rains and debris in the canals caused them to overflow, placing 75% of the city underwater. The floods caused over 900 million USD in damages, affected 400,000 people⁴², and the official death toll was 80⁴³. The flood was considered to be a once-in-fifty-years phenomenon.

After the flooding, people began attempting to repair and rebuild their lives, with the assistance of humanitarian aid organizations such as Habitat for Humanity⁴⁴. With the extent of the flooding, aid organizations were forced to focus their resources on the most vulnerable (widowed, elderly, and disabled heads of households). On the coast and along waterways, homes and storm surge walls were built higher⁴⁵. Many lost everything.

Then, in 2013, the city experienced more catastrophic, once-in-a-lifetime flooding. And again in 2014 (twice that year)⁴⁶. Water seems to be Jakarta's worst nightmare. However, the reality is that these problems are largely caused by certain people not having enough of it⁴⁷.

BACKGROUND

Jakarta is located on the Northwest coast of the island of Java. Built on a swampy, coastal floodplain, it has 13 rivers that run throughout, as well as man-made canals. At first glance, the

⁴² JBA Risk Management. A Retrospective View of Floods in Jakarta

⁴³ ABC News. Jakarta Flood Claims 80 Lives; (New York, NY, 10 February 2007)

⁴⁴ Habitat for Humanity. Response to Floods in Indonesia; (United Kingdom, 2017)

⁴⁵ Vox.com. Why Jakarta is sinking; (Washington, DC, February 2021)

⁴⁶ JBA Risk Management: A Retrospective View of Floods in Jakarta

⁴⁷ Vox.com. Why Jakarta is sinking, (Washington, DC, February 2021)

city's design seems like any other coastal city. However, upon closer inspection, the city's design has an insidious past based in racism and colonization.

In the 1600s, when European countries were racing to colonize the world, the Dutch colonized the port city of Jayakarta. They destroyed it, and built Batavia as a center of their developing empire where Jayakarta once stood. The city was built to mimic the style of Dutch cities; narrow rows of townhouses punctuated by canals. These canals were built to make trade and defense easier.

However, they were also designed to make managing the indigenous Chinese, Indian, and Arab people it had subdued in the process of colonization easier to control; there were several different blocks, each separated by canals that had very few bridges connecting them. Each block, or *kampong* contained a different ethnic group, where they were confined, making them easier to control by the outnumbered Dutch. They ruled this way until the 1700s. Then, the poorly maintained canals began to deteriorate. Diseases like malaria and typhus ran amuck. As a result, the wealthy Dutch people moved South of Batavia, where they built a new central colonial administration. Here, homes were built with piped water supply connected to a central water system which provided clean drinking water and plumbing. However, this piped water supply was limited to the wealthy Dutch people⁴⁸.

The deteriorating canals continued to be neglected. Indigenous people in the kampongs, without access to pumped water were forced to either buy it from vendors, pump it from the disease ridden canals, or pump it from groundwater aquifer wells. The kampongs themselves became synonymous with poverty and disease, through no fault of their inhabitants. Besides a few public pumps, residents were forced to extract groundwater to survive⁴⁹. When the

⁴⁸ Vox.com. Why Jakarta is sinking;(Washington, DC, February 2021)

⁴⁹ Permanadeli, Risa & TADIE, JEROME. (2014). Understanding the Imaginaries of Modernity in Jakarta: A Social Representation of Urban Development in Private Housing Projects. Papers on Social Representations

population was only about 115,000 people⁵⁰ groundwater pumping was no issue. After an armed struggle for independence, the Dutch reached an agreement with Indonesian authorities, recognized their independence, and officially vacated it in 1949. Migrants began pouring into the city, to create the modern day population of 10 million people.

MODERN DAY

Despite the massive growth in population, the city's water infrastructure was not expanded to support the size. To this day, less than 50% of the population has access to clean, piped water. The rest of the population, mostly poor and indigenous people, are forced to pump groundwater. This groundwater is drawn from deep wells that reach into aquifers, layers of rock filled with water, with layers of soil on top. The problem is, a city of 10 million people, with over half of the population depending on groundwater for survival, has formed empty spaces in these aquifers, causing the land on top to sink in a phenomenon called land subsidence⁵¹. Combine falling aquifers with a lack of replenishment by rain due to concrete covered grounds, the land has fallen up to 5 meters (16 feet) in certain parts of the city since 1977⁵²

Cities around the world, from Mexico City to Houston to Amsterdam, are also grappling with land subsidence, largely due to overharvesting of aquifers and overdevelopment on unstable foundations⁵³. However, few have the compounding threat of falling land combined with rising sea levels like Jakarta. The land is sinking at a rate of 25 cm a year⁵⁴, just as sea levels are rising an average of 3.6 millimeters a year.

⁵⁰ Batavia, Dutch East Indies, Wikipedia 19 September 2022,

⁵¹ Vox.com. Why Jakarta is sinking; (Washington, DC, February 2021)

⁵² BBC; Mei, Meyuri; Hidayat, Rafki. "Jakarta, the fastest-sinking city in the world" (BBC, London, UK, August, 2018)

⁵³ Maria Marabito. "12 Rapidly Sinking Cities" (Treehugger, New York, NY, March 2021)

⁵⁴ Vox.com. Why Jakarta is sinking; (Washington, DC, February 2021)

THE SCIENCE BEHIND THE CATASTROPHE; METAPHORS OF UNDERSTANDING

Sea level rise is the result of a chain event of climate catastrophes; to put it simply, humans are generating greenhouse gasses at a rate much faster than natural processes can reabsorb them. Before industrialization, natural processes such as volcanic eruptions and wildfires created an insulation that protected earth from the cold vacuum of space, sort of like down in a winter coat. However, after industrialization, unnatural processes such as the burning of fossil fuels have created an excessive amount of greenhouse gasses in the atmosphere, preventing heat generated through these processes and through solar radiation from escaping (to extend the metaphor, the down coat was overstuffed). Heat trapped in the atmosphere is causing ocean and surface temperatures to rise. As surface temperatures rise, and more solar radiation is absorbed, glaciers that have been stable for millennia have begun melting, sliding off the land into the ocean. Think of a glass of water that you add ice cubes to; after every ice cube you add, the water level rises⁵⁵. Except instead of ice cubes, its glaciers such as the Thwaites in Antarctica, which extends six stories high, and has roughly the surface area of Florida. The Thwaites glacier has become more unstable as sea temperatures increase; the collapse of this glacier alone could cause sea levels to rise half a meter, and the surrounding ice sheet that it supports would cause 3 meters of sea level rise⁵⁶. In addition to melting glaciers, warming ocean temperatures have caused the ocean water itself to expand. With all of these compounding factors, scientists estimate that we could have anywhere from 1.5 to 2.5 meters of sea level rise by the end of the century. Even if we had a dramatic reduction in emissions, we would still be facing up to 2 meters of sea level rise by 2100⁵⁷. This is the scary reality that we must face up to in order to begin to be able to address the magnitude of the problem.

⁵⁵ Climate.gov; Lindsey, Rebecca; Climate Change: Global Sea Levels

⁵⁶ Vox.com: Why scientists are so worried about this glacier; (Washington, D.C, July, 2020)

⁵⁷ David Wallace-Wells. *The Uninhabitable Earth* (Tim Duggan Books, New York, NY, 2019) p. 65

DISCUSSION AND ANALYSIS

Given the current projections provided by climate scientists for the average increase in global temperature and rising sea levels, the situation surely seems bleak. Even as someone passionate about preventing climate change, being constantly bombarded with news about another once-in-lifetime catastrophic weather event occurring more like once a month takes a psychological toll. However, just because current projections regarding climate change are bleak, doesn't mean that we should just sit idly by as entire island nations are swallowed into the ocean and large swaths of land become so hot or barren they are uninhabitable. One silver lining of climate change is that it has fostered seemingly limitless innovation; feats that at one point seemed like a climate scientist's fever dream are now becoming a feasible reality. While we have surpassed the point of global warming and rising sea levels, it's just a matter of whether we will put in the effort and sacrifice to ensure that the level of temperature rise is closer to 1.5 degrees celsius than 5. In the case study countries aforementioned, solutions have already been applied, and the desire to survive has necessitated even further innovation. Here are those solutions;

Solutions

PAKISTAN

In the modern day, conflict between the new, now-nuclear powers seems to not have improved by much. Tragedies such as terror attacks seem to have become the norm, and much of this violence culminates in the region of Kashmir, due to its invaluable resources. The Indus Water Treaty of 1960, negotiated by the World Bank, seems to have worked temporarily. Both countries had interest in cooperating; India needed World Bank financing, and the largely agricultural economy of Pakistan needed water to support it. So India agreed to terms that

favoured Pakistan. Under the treaty, Pakistan was supposed to have received 55,000 cusecs of water; however, in recent years Pakistan has reported that Indian authorities have cut their water to a mere 13,000 cusecs. This is partially due to Indian authorities slowly expanding the construction of dams on the three rivers, gradually reducing water flow into Pakistan. In addition, as a result of climate change related decline in rainfall, and groundwater overuse, annual per capita water availability has fallen 80 percent⁵⁸. With the entire livelihood of the country being dependent on water, one can recognize the way in which the continued flow of the Indus river into Pakistan can determine the survival of the Pakistani people. Being upstream, India has the upperhand. It could desert the breadbasket of the Punjab. As stated by Christian Parenti in *Tropic of Chaos*;

“[India] is threatening to cut off the waters of the three rivers for the purpose of irrigating some of its lands. Now, if it does this without replacement, it is obvious that we shall be starved out and die of thirst...you can well realize that rather than die in this manner, people will die fighting”⁵⁹

With all of the animosity that exists between these two countries, it seems as though compromise will never take place. However, much of this animosity is being stoked by politicians for the sake of garnering support for their nationalist agendas. The President of India, Narendra Modi, has expressed his desire to make India an ethno nationalist Hindu state⁶⁰. There also exists a high degree of Pakistani nationalism; much of this nationalism culminates in the most powerful institution in Pakistan, the army, whose primary reason for being is to oppose India. This military nationalism can be exemplified through a viral meme depicting children declaring their loyalty to

⁵⁸ Christian Parenti, *Tropic of Chaos* (Bold Type Books, New York, NY, 2011) p. 126-129

⁵⁹ Christian Parenti, *Tropic of Chaos* (Bold Type Books, New York, NY, 2011) p. 126

⁶⁰ Yasmeen Serhan, *The Hinduization of India Is Nearly Complete* (The Atlantic, Washington, DC, May 2022)

their country⁶¹. The reality is that Pakistanis and Indians have much more in common than they realize. With only 75 years of separation between the two nations, they still share many cultural practices; they eat many of the same foods, they watch the same sports, and they speak similar languages. There are many people within the two countries who respect one another's traditions; for example, in the town of Massanian, which was a Muslim majority city, there exists a former Muslim shrine that is being maintained by the now Sikh (theologically a separate religion but officially incorporated into Hinduism) residents, who respect the religion and its history⁶²

While cooperation between the two countries seems unlikely, it will be necessary for their survival into the future. The Indus Water Treaty is a testament to the ability of the two nations to cooperate; but continued diplomatic relations between the two nations will need to be facilitated, especially as irregular weather patterns make water increasingly unpredictable and difficult to access.

BRAZIL

With the continued projected population growth increasing the demand for beef, as well as the deeply entrenched nature of corporate economic interests, there is no way that we will ever stop cattle farming, in Brazil and abroad. However, innovation, as well as basic human instinct for survival, has provided an incentive for sustainable development in places like Brazil. As stated in Magdoff and Foster's *What Every Environmentalist Needs to Know About Climate Change*;

⁶¹ Birthgiver586, I WILL BE PILOT Pakistan meme (Youtube August 28, 2020) <https://youtu.be/wQvcv-HjBog>

⁶² Vox "How This Border Transformed a Subcontinent: India & Pakistan." (YouTube, Vox, Washington, D.C. 26 June 2019,.

“Indigenous peoples today... are reinforcing a new ethic of responsibility to the earth... promoting new forms of ecological agriculture, such as Brazil’s MST (Movimento dos Trabalhadores Rurais Sem Terra)... new urban transportation systems pioneered in Curitiba in Brazil and elsewhere.⁶³ “

In addition, many farmers have altered their agricultural practices in the interest of environmental and resource preservation, using methods such as “mixed-crop agroecological farming, agroforestry, and integrated pest management [using] few or no chemical pesticides and fertilizers [as well as] low impact water-capturing and rainwater harvesting technologies” according to Parenti. Many other such sustainable practices will continue to emerge as the climate situation continues to progress, as well as adapting to the continually changing ecological and social environment. Lastly, it will require a massive rollback of the policies introduced in the past several decades that have enabled unrestricted development⁶⁴.

When attempting to protect the environment and mitigate climate change, it is important that we try to avoid impacting the very people who are being affected the most. According to Naomi Klein’s *This Changes Everything*, “the offset market has created a new class of green human rights abuses, wherein peasants and indigenous people who venture into their traditional territories (reclassified as carbon sinks) in order to harvest, plant, wood, or fish are harassed or work”⁶⁵. At the same time, climate criminals are getting off with a slap on the wrist by pursuing ‘green’ initiatives that are actually just greenwashing, allowing them to get away with more climate destruction in secret.

⁶³ Fred Magdoff, John Bellamy Foster. *What Every Environmentalist Needs to Know About Capitalism* (Monthly Review Press, New York, NY, 2011) p. 132

⁶⁴ Christian Parenti. *Tropic of Chaos* (Bold Type Books, New York, NY, 2011) p. 175-177

⁶⁵ Naomi Klein. *This Changes Everything* (Simon & Schuster Paperbacks, New York, NY, 2014) p. 222

The election of the current President of Brazil, Luiz Inácio Lula da Silva, does bode well for the future of the Amazon. During his previous term from 2003 to 2011, Brazil actually managed to make some progress in preserving the Amazon; they evicted several of the illegal settlers on the land who had arrived with the goal of developing the land for profit and fined those who remained; even though they were rarely paid, these fines made it difficult for the recipient of the fine to get the loans necessary to run a business. For a long time, this functioned extremely well; deforestation fell a staggering 83.5% from 2004 to 2012⁶⁶. This progress was reversed with the election of former President Jair Bolsonaro. Progress, however, is not linear, and Brazil was able to resume its efforts to restore and preserve the Amazon with the election of Lula in October 2022. De Silva has signaled his intention to continue his policy of Amazon protection and restoration, starting before the election with “plans to grant new protected status to half a million square km (193,000 sq miles) of the Amazon rainforest, fight deforestation, subsidize sustainable farming and reform Brazil's tax code to usher in a green economy”⁶⁷. Since his election, he has already begun turning his promises into reality; just recently, he appointed “two internationally celebrated Amazon defenders, Marina Silva and Sônia Guajajara.”⁶⁸ Silva will be returning to the position that she held during the early 2000s period of environmental protection, which she was cut from during the Bolsonaro administration. Guajajara will be entering a position that is the first of its kind in the country; she will be in charge of Brazil’s Ministry for Indigenous people, created in the wake of violence and disenfranchisement of indigenous people during the Bolsonaro administration. While this is good news for the fate of the Amazon, Lula and his administration face the same challenge currently faced by the Biden

⁶⁶ Matt Sandy. “The Tipping Point” (Time Magazine, New York, NY, September 2019) p. 76

⁶⁷ Jake Spring, “Analysis: Brazil's Green New Deal: Lula promises environmental policy overhaul” (Reuters, London, UK, October 27, 2022)

⁶⁸ Tom Phillips, “Lula names staunch Amazon defenders as ministers in Brazil” (The Guardian, December 29, 2022, London, UK)

administration in the US, which is dismantling the environmentally detrimental policies created during the previous administration, as well as working with a ministry of representatives who intend to continue Bolsonaro's policy of developing the Amazon⁶⁹.

It is vital that we protect the Amazon, not just for the sake of its indigenous inhabitants, and preserving its rich biodiversity, but also maintaining its capacity as one of the largest carbon sinks on earth. By utilizing technology that has existed in nature for millenia, we can limit the effect of greenhouse gasses on the warming of our planet. International legislative bodies must place pressure on the Brazilian government and agricultural companies to curb their deforestation of the Amazon. We no longer have the option to choose to preserve the Amazon; it is essential to the survival of our ecosystems and ultimately the human race.

INDONESIA

With all these climate catastrophes compounding, things seem pretty hopeless for coastal cities like Jakarta. Things have gotten so bad, that the Indonesian government has proposed relocating the capital from Jakarta to the neighboring island of Borneo. But that fixes nothing for its 10 million inhabitants, especially those in poverty who do not have the means to relocate. The government has proposed a few solutions to address rising sea levels, as addressed during "Why Jakarta is Sinking" by Vox;

"To save the city, in 2014, the government announced a project, in collaboration with a Dutch architecture firm, to build and reinforce 120 km of seawalls, to stop the water from flooding the land as it sinks. But so far, only these 10 kilometers have been reinforced...The problem is that, just like the rest of Jakarta, the seawall is sinking. The project also includes an

⁶⁹ Tom Phillips, "Lula names staunch Amazon defenders as ministers in Brazil" (The Guardian, December 29, 2022, London, UK)

ambitious \$40 billion plan to build a 38 km wall, shaped like a massive bird, to protect the coast from flooding. But this project could take up to 30 years to complete. And by then, Jakarta could have lost most of its coastal land.”⁷⁰.

In order to face this challenge head-on, it seems like we will need a miracle to address this apocalyptic reality. While innovation is important, the truth is that many technologies that can be used to address this crisis already exist, or are actively being developed;

Dutch designers have invented a new type of sea-wall that addresses multiple issues with previous designs. First, the sea-wall buffers a storm surge crashing into a harbor. Second, it harvests the massive energy generated by such force to create electric energy; this can help reduce dependency on fossil-fuel energy, which contributes to greenhouse gas emissions. The design also incorporates water within, so instead of fighting against the strong currents of the river or ocean it is blocking, it flows with it, preventing damage and future maintenance, as well as floating on the surface of the water, instead of being built on the continually sinking ground⁷¹.

Second, the Indonesian government will need to fill the gap in water accessibility. By expanding the piped water infrastructure to the rest of Jakarta, citizens will no longer have to pump groundwater for subsistence, and land subsidence can be halted; several cities in the region have managed to stop their cities from sinking by expanding their piped water infrastructure⁷².

Last, the least expensive and perhaps the most obvious solution is restoring coastal wetlands. Coastal wetlands, such as mangrove forests, not only form a buffer to storm surge that protects the inland, but also form massive carbon sinks that absorb excess greenhouse gasses⁷³. Industrial development of coastal regions has resulted in the destruction of coastal wetlands. But

⁷⁰ Vox.com. Why Jakarta is sinking;(Washington, DC, February 2021)

⁷¹ Waterstudio.NL; Laylin, Taflin; Parthenon, The Floating Sea Wall

⁷² Vox.com. Why Jakarta is sinking;(Washington, DC, February 2021)

⁷³ Paul Hawken. Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming, p. 112 (Penguin Books, London, UK, April 2017)

the amazing thing about nature is that it can be restored. Mangrove forests can and are being replanted in coastal communities facing sea level rise around the world⁷⁴.

The work being done by the Indonesian government in collaboration with Dutch engineers is a testament to the capacity of colonizer countries to work together with the countries they previously colonized to address the problems they are facing due to climate change. It is the least they can do, given the nature of state failure that many post-colonial states experience as a result of their experience being colonized, as discussed by Parenti in *Tropic of Chaos*. The innovation and ingenuity of the people trying to save Jakarta is a beacon of hope for the rest of the world.

⁷⁴ University of Cambridge; McIvor, Anna; Spencer, Tom; Möller, Iris; Spalding, Mark; Storm Surge Reduction by Mangroves, p. 3
<https://www.mangrovealliance.org/wp-content/uploads/2018/05/storm-surge-reduction-by-mangroves-1.pdf>

CONCLUSION

While the history of colonization is largely dark and depressing, the future does not have to share the same bleak reality. Colonizer states can work with previously colonized states to innovate solutions to address climate change. By providing funding and modernized scientific innovation, colonizer states can work to create new inventions to solve problems created as a result of climate change. Just recently, a major breakthrough in energy science occurred that has the potential to revolutionize the way we consume energy; using the technology of nuclear fusion, scientists managed to create an energy source that generates more energy than it uses, the first of its kind. This is the same process that generates solar energy in stars like our Sun. While the amount of energy this experiment was able to generate only amounts to enough to “boil a few tea kettles”⁷⁵ continued support by developed nations into innovations like this has the potential to accelerate the capacity of renewable energy generation. In addition, post-colonial states can incorporate existing “technologies” such as mangrove forests to address climate change related problems

One of the scariest parts of all of these problems is that many of them exist in a feedback loop. For example, rising temperatures cause melting snowpacks (which would normally aid in reflecting back solar radiation, but are now reflecting less and less, causing more solar energy to remain). With the rate of the warming temperature, melting ice caps, and rising sea levels, stopping climate change is no longer an option. However, mitigating climate change is; scientists believe that adequate policies and action to address this crisis could be the difference between an entire celsius degree of warming⁷⁶. While that doesn't sound like much, that could be the

⁷⁵ Esme Stallard, Breakthrough in nuclear fusion energy announced” (BBC, London, UK, December 2022)

⁷⁶ Climate Action Tracker; “Global update: Projected warming from Paris pledges drops to 2.4 degrees after US Summit: analysis”; <https://climateactiontracker.org/press/global-update-projected-warming-from-paris-pledges-drops-to-two-point-four-degrees/>

difference between an uncomfortably warmer existence where we face and adapt to climate catastrophes head-on, or ultimate human extinction.

Just because we aren't currently on track to meet the goals of the Paris Climate Accord doesn't mean we shouldn't try. On an individual level, we can take steps to reduce our carbon footprint, through our choices in consumption; opting for power saving alternatives, like equipping our homes with solar panels and opting for an electric vehicle, if given the choice. Individuals also need to make their voices heard to their representatives and to corporations; individuals who are capable need to show up, make phone calls, write letters, and attend town halls, and vote for representatives who hold the interests of the climate above the interests of corporations. At the end of the day, while governments are often subject to corporate lobbying interests due to the nature of campaign finance in countries like the United States, citizens of healthy democracies can choose to elect representatives that place the interests of the environment over the interests of campaign finance and lining their pockets. In addition, while corporations are most likely to prioritize their bottom line, their bottom line does not exist without the income created by consumer spending choices. Consumers can choose to concentrate their spending on companies that choose to prioritize responsible and sustainable resource extraction and manufacturing processes. However, all of this individual action is in vain if corporations and governments do not match our energy; we can eat plant-based burgers and drive Priuses till the cows come home, but if corporations don't make efforts to reduce their emissions, and governments to regulate them, then it's pointless. Many worry that a transition away from fossil fuels and towards renewable energy will limit economic growth; on the contrary, sustainable energy investment and innovation has the potential to revolutionize our economy, away from one dependent on oligarchic oil producing states, and towards one that enables

financial independence for developed and developing countries alike. Since corporations and governments are most likely to prioritize profits over people, citizens of planet earth are the last hope for any chance of a livable planet.

It is up to us to act, now.

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