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Evaluating Environmental Degradation as a Cause of Burma's Rohingya Crisis

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Abstract

Over the course of the past decade, persecution against the Rohingya ethnic group in Western Burma has escalated to the point of genocide. Since August 2017 alone, more than 730,000 Rohingya have fled their homes in Rakhine State to neighboring Bangladesh[1]. Previous studies on the causes of this crisis have focused on the colonial legacy of discrimination toward ethnic and religious minorities in Burma, themes of identity and citizenship, and role of social media in fueling the violence. Over, this paper will consider what may be an overlooked factor: the role of environmental stress in inciting the conflict. After outlining commonly understood causes of the crisis, this paper seeks to evaluate the extent to which environmental stress factored in by (1) examining the status of environmental degradation and natural disasters in Burma, (2) considering how environmental pressure may exacerbate violence against the Rohingya, and (3) comparing this crisis to ethnic conflict in Sudan, where environmental stress was undoubtedly a cause of violence. By establishing where and how environmental stress played into the Rohingya crisis, recommendations to reduce the likelihood of environmental factors inciting similar conflicts can be made.

Introduction

Over the course of the past decade, persecution against the Rohingya ethnic group in Western Burma has escalated to the point of genocide, with the United Nations Human Rights Council finding genocidal intent in a 2019 factfinding mission[2] and a trial in the International Court of Justice ongoing.[3] Since August 2017 alone, more than 730,000 Rohingya have fled their homes in Rakhine State to neighboring Bangladesh[4]. Previous analysis on the causes of this crisis have focused on the colonial legacy of discrimination toward ethnic and religious minorities in Burma,[5] themes of identity and citizenship,[6] consequences of the 2011 democratic opening including the emergence of Buddhist extremist groups,[7] and the contribution of social media in escalating violence.[8] However, this paper considers what may be an overlooked factor: the impact of environmental stress. After outlining historical context and the commonly understood causes of the crisis, this paper evaluates the extent to which environmental stress played a causal role by (1) examining the status of environmental degradation and natural disasters in Burma, (2) considering the relationship between the environment and violence, and (3) comparing this crisis to ethnic conflict in Sudan, a frequently cited eco-conflict. After establishing where and how environmental stress is related to the Rohingya crisis, policy recommendations for lessening this factor's role in Burma—as well as in other conflict regions— are offered and assessed.

Background and Historical Context

Burma, also known as Myanmar, is a country of approximately 55,600,000 people located in Southeast Asia (see Figure 1for

map) with an extremely ethnically diverse population; the most populous ethnic groups are Burman (68%), Shan (9%), Karen (7%), Rakhine (4%), Chinese (3%), Indian (2%), and Mon (2%).[9] For most of the region's history, various ethnic groups maintained independent city-states and kingdoms, but in the 19th century, Britain conquered Burma and incorporated it as a province of the Indian Empire.[10] In 1937, Britain began administering Burma as a separate, self-governing colony, and in 1948 it gained independence.[11]

Figure 1: Map of Burma administrative districts[12]

From independence until recently, Burma has been governed by a series of right-wing military and one-party regimes. [13] In 1989, following a year of violent unrest, a new ruling junta changed the country's name from Burma to Myanmar, although many countries including the United States still do not recognize the name change due to the illegitimacy of the government that made the decision.[14] In the 1990 election, the National League for Democracy, a pro-democracy party led by Aung San Suu Kyi, won a landslide victory, but the junta refused to hand over power and Suu Kyi was placed under house arrest.[15] In 1991, Suu Kyi gained international recognition when awarded the Nobel Peace Prize while still under house arrest; in total, she would spend 15 of the next 21 years under house arrest and was most recently detained in February 2021 during the country's latest coup.[16]

Following the 1990 elections, General Than Shwe became the paramount ruler of the country for almost two decades until the 2011 general elections, when the military junta was officially dissolved.[17] In the wake of this democratic opening, President Barack Obama became the first U.S. president to visit Burma in 2012, meeting with Suu Kyi, who had been released from house arrest and elected to the national legislature.[18] President Obama commended her as a champion of democracy and human rights, thus launching Burma's progress into the international spotlight.[19] In 2015, the first credible election in decades was held, with the NLD emerging with an overwhelming victory and Suu Kyi becoming the de facto head of state.[20]

Reforms over the past decade were marred by the continuing control of the military (also known as the Tatmadaw) in daily and political life and proven to be short-lived in the aftermath of the latest coup.[21] The current Commander in Chief, Min Aung Hlaing, was recommended for investigation into crimes against humanity, war crimes, and genocide by the UNHRC in 2019[22] and assumed all state power after leading the Tatmadaw in arresting Suu Kyi and other senior NLD leaders in February 2021.[23]

The 2019 investigation into Aung Hlaing primarily regarded the intense violence against the Rohingya people on the western edge of Burma.[24] The government of Burma recognizes 135 "national races" in Burma based on a list compiled in 1962.[25] The Rohingya—all 2.5 million of them—are

not one of these, constituting the world's largest stateless population, meaning they are not citizens of any country.[26] In fact, most Burmese (including Suu Kyi) do not even use the word "Rohingya," rather, they consider the group to be illegal immigrants from Bangladesh.[27] The exact origins of the Rohingya are not known, but there is evidence that this group has been present in the region since the 13th century.[28] The Rohingya are not the only Muslims in Burma—about 4% of the population is Muslim, compared to more than two-thirds who are Buddhist.[29] However, Rohingya are distinct from other Muslims in the country, living in rural areas of the country's Rakhine State, speaking a dialect of Bengali, and having Muslim rather than Burmese names.[30]

There have long been divisions between the Rohingya and other ethnic groups in Burma. During WWII, the Rohingya, along with the Karen and Kachin minority groups, sided with the Allies and engaged in guerilla warfare while the Burmans sided with the Japanese.[31] Following independence in 1948, the Rohingya were gradually excluded from state institutions. In 1974, the Rohingya were labelled foreign citizens and mandated to carry registration cards to distinguish them from Burmans.[32] The 1982 Citizenship Law then effectively rendered the Rohingya stateless by requiring all citizens to either (1) be a member of the 135 national races, (2) have a pending application under the 1948 Union Citizenship Act, or (3) have conclusive evidence of residence in Burma before independence.[33] The political upheaval around 1990 further worsened conditions for the Rohingya: a campaign against Muslims was seen as strengthening the military government's national credentials among Buddhists.[34] Nearly 300,000 Rohingya fled to Bangladesh in the early 1990s, claiming the military forced them from their homes,[35] and the Tatmadaw restricted the population's movement within Rakhine state.[36] In 1995, the UNHCR pressured Burma into providing "Temporary Registration Cards" to the Rohingya, but violence continued past the turn of the century with attacks on Muslim schools and places of worship.[37] In 2005, a two-child policy was introduced in Rakhine State, solely for the Rohingya population.[38]

Violence worsened after the democratic opening of 2011.[39] In June 2012, the alleged rape and murder of a Rakhine woman by three Muslim youths incited a killing spree.[40] The Rakhine are the largest ethnic group in Rakhine state, and are predominately Buddhist; in 2009, insurgents formed the Arakan Army seeking self-determination for the Rakhine people, adding another complicated dimension to the conflict as the army clashes with both the Tatmadaw and Rohingya.[41] The violence in 2012 between Rakhine and Rohingya communities left at least 100 people dead and left thousands of buildings including homes, mosques, monasteries, and schools burned down.[42]

2015 is generally considered the start of the Rohingya refugee crisis, as increasing "ghettoization, sporadic massacres, and restrictions on movement" of the Rohingya caused thousands to flee on rickety boats to other Southeast Asian countries.[43] In 2017, the Tatmadaw began a "clearance operation," which included "extra judicial killings, gang rapes, arson—all argued to constitute genocide, ethnic cleansing and crimes against humanity."[44] Some 700,000 Rohingya fled Burma to refugee camps in Bangladesh, leaving just about 200,000 Rohingya in Rakhine State by October 2018.[45] In 2019, Burmese authorities claimed the Rohingya could return, and began operating "reception centers" near the border, but these centers are often empty due to the displaced people's deep distrust that

they will return to safe conditions.[46] Findings from the 2019 UNHRC factfinding mission found that although "clearance operations" on the scale of 2017 ceased, "the Rohingya remain the target of a Government attack aimed at erasing the identity and removing them from Myanmar...With another year having passed without improvements to their dire living conditions, prospects for accountability or legal recognition as citizens of Myanmar, their plight can only be considered as having deteriorated."[47]

Established Causes of the Conflict

Most existing scholarship on the causes of the Rohingya crisis focuses on the long history of ethnic conflict and discrimination in Burma. Jobair Alam argues that this discrimination is rooted in the British colonial era, stating that before the arrival of the British, "the different groups that make up the complex ethnic tapestry of Burma were never under the authority of a single government."[48] The British era created the majority-minority divide and deep nationalism tied to Buddhist identity that exists to this day.[49] After independence, discrimination was solidified into laws such as the 1982 Citizenship Law which rendered the Rohingya stateless and deprived them of access to education, health services, and employment.[50] This stripping of citizenship "largely (re)shaped the identity of the Rohingya in Myanmar as a non-Burman Muslim religious minority," compared to minorities who "strictly comply with and fit absolutely in the Burmese-constructed ideals, belief and identity."[51] Even disregarding acts of violence against the Rohingya, their rejection from the state has led to restrictions on travel, marriage, birthing rates, and freedom of religion.[52] The Rohingya are not the only minority group to face discrimination in Burma; the UN has investigated the Tatmadaw for violence against groups including the Shan, Kachin, Karen, and Chin[53] (see Figure 2).

Figure 2: Image by Author *In 2018, I briefly visited the city of Tachileik in Burma's Shan State while studying abroad in Thailand. The Shan battle for independence is another example of ethnic conflict in Burma.*

However, while there are multiple ethnic conflicts ongoing in Burma, the campaign against the Rohingya has been the most systematic.[54] A 1988 regime document recently uncovered by the International State Crime Institute exposed a long term plan for eradication of the Rohingya, with steps including forbidding land ownership and finding the Rohingya at fault in all court cases—but avoiding mass killing "in order not to invite the attention of the Muslim countries."[55] This document embodies one of the main established causes of the current crisis: discrimination against the Rohingya is deeply rooted in laws and practices under the military regime, and the Tatmadaw has simply been waiting for an excuse "to totally wipe them out from Rakhine."[56] The extent to which the ethnic conflict is civilian as well as military based is debated; for example, there is deep animosity between Rakhine and Rohingya locals, but at least part of this resentment may be attributed to manipulation by the Tatmadaw in turning the groups against each other.[57]

Beyond ethnic discrimination, religious discrimination is pertinent to this crisis. Islamophobia is common among many Burmese Buddhists, and Rakhine

state's location bordering Muslim Bangladesh makes some consider it the "'western gate'... the last line of defence protecting the pure, Theravadda Buddhism" of Burma from Islam.[58] Some Buddhists hold the view that, "If the gate breaks, the tens of millions of Muslims from Bengal will overrun not only Myanmar but also mainland Southeast Asia, much as is narrated to have occurred centuries ago in island Southeast Asia."[59]

Nobody disputes that a long history of ethnic and religious discrimination against the Rohingya underlies the latest violent campaign against them. What is less certain however, is the specific events that triggered the unprecedented bloodshed of the past decade. Waves of violence have hit Rakhine State before, but recent years are distinct in their display of "undeterred propagation of hate speech coupled with clear political coordination."[60] One theory is that the democratic reopening triggered the violence. The most recent Constitution, written in 2008, "is notable for the degree to which it has not only conjoined the state and national races lexically but also institutionally."[61] The Constitution emphasized the idea of "taingyintha," or "national races" of Burma, and suggested that belonging to one of the recognized races was of even greater importance than citizenship.[62] The Constitution frames taingyintha as creating a "mythic unity that has never emerged and could be read as a defiant repudiation of ethnic diversity."[63]

In addition to constitutional changes, when the military junta lifted limits on free expression and assembly in 2011, it allowed for a wave of populist mobilization where "deep, pent-up societal division and hatred, which was repressed by authoritarian rule" was unleashed by the democratization process.[64] Two Buddhist extremist groups emerged in the aftermath of the 2011 transition: the "969 Movement" and "Ma-Ba-Tha," both of which have been tolerated and even promoted by the government.[65] Many westerners consider Buddhism a pacifist religion; however, certain monks are at the forefront of the violence. For example, U Wirathu, the monk leader of the 969 movement, was called the "Face of Buddhist Terror" by Time magazine in 2013.[66] These extremist groups successfully campaigned the government to revoke the Rohingya's temporary registration certificates in 2015 and have spewed hate speech, including calling Islam "a faith of animals with uncontrollable birthrates."[67] Additionally, fearmongering and discrimination have become campaign tools in the era of democracy, and both "hardliners and so-called reformists find incentives in being complicit in the anti-Muslim conflicts."[68] Thus, while democratic developments in Burma over the past decade promised reform from the years of junta control, they may in fact have helped incite the conflict in Rakhine State by releasing "hard-core and deeply felt grievances about Buddhism being under siege from the forces of modernity, globalism and Islam."[69]

A final factor commonly cited as amplifying the violence is the use of social media in Burma. In Burma, Facebook is so widely used by the country's 18 million internet users that it is often equated with the internet itself.[70] In 2018, a *New York Times* investigation revealed that not only were extremist groups using Facebook to disperse hate speech, but the military itself was behind turning "the social network into a tool for ethnic cleansing."[71] Military personnel created fake accounts and flooded them with hate speech, including posting pictures of corpses they said were evidence of massacres by the Rohingya, and stated that Muslim attacks were imminent.[72] Facebook took down accounts after the investigation revealed ties to the military but received criticism for its response and

commitment to preventing similar situations in the future.[73] The internet provides a means of propaganda beyond anything in the past, and the systematic use of it by extremists and the military to instigate violence contributed to the crisis' outbreak and intensity.

Environmental Factors in Burma

With an understanding of the prevailing causal theories, environmental factors in Burma can be discussed. The environment has long been studied as a "threat multiplier" for existing conflicts.[74] Thomas F. Homer-Dixon writes that environmental scarcity "can contribute to civil violence, including insurgencies and ethnic clashes."[75] However, its role is rarely direct, rather interacting with other factors to produce violence, and therefore analysts often overlook scarcity's role in flaring underlying stress and instead interpret economic, social, or political factors as the principal cause.[76] An example of interaction between social and environmental factors is "resource capture," when dominant groups within a society "shift resource distribution in their favor." [77] Moreover, environmental scarcity may strengthen group identities based on ethnic, class, or religious affiliations in a process known as social segmentation, as groups face intensified competitive for resources.[78]

While the role of resource scarcity in conflict is far from new, climate change, population growth, and economic development are expected to increase the prevalence of these circumstances.[79] Through catastrophic weather events, climate change, "will lead to new or more intense resource scarcities, which, in turn, will trigger more intense competition and conflict between states and local communities sharing common resources."[80]

This existing framework for the role of environmental scarcity and natural disasters in fueling conflict evokes the situation in Burma, which faces an increasingly vulnerable environmental state. A 2019 World Bank report concluded that Burma's ecosystems, fisheries, and forestry are under "tremendous pressure."[81] Burma's marine fish resources have declined as much as 90 percent since 1980, forest cover has declined by 10 million hectares since 1990, and urban waste, mining discharge, and air quality are all deteriorating as well.[82]

As Burma relies heavily on natural resource exploitation for economic development, environmental degradation affects not only the natural world and human health, but economic prosperity. Seventy percent of the labor force is employed in agriculture, accounting for 37.8 percent of GDP.[83] The government has prioritized short-term profit over long-term sustainability, with slash-and-burn and industrial agriculture methods promoted.[84] Burma's policies hostile to sustainable changes "can force the cultivation systems into suboptimal practices … or obstruct them altogether, leading to poverty and conflict, alienating cultivators and leading to degraded land." [85] Climate change will compound this threat, with the FAO finding that Burma is "highly vulnerable to climate change and extreme weather conditions," with significant risk for agricultural production and food insecurity. [86] The FAO and World Bank call for sustainable policy approaches to prevent a worse-case scenario.

Unfortunately, a different kind of worse-case scenario is already facing Rakhine State. Rakhine State is one of the most resource-rich parts of the country, despite being one of the poorest economically.[87] However, recent efforts aim to tap into the region's potential. For example, between 2000 and 2014, Rakhine state lost more mangrove forest cover than

any other state in Burma, causing an estimated ecosystem value loss of $946.87 million per year due to damages to fisheries and habitat.[88] When resource-rich Rakhine state is contrasted to conditions in Burma's central states, where the populous regions of Mandalay, Magway, and Sagaing display existing land degradation due to problems with erosion, desertification, salinization, and deforestation,[89] the question is raised: does the recent exploitation of Rakhine state's resources constitute a "resource capture" scenario as conditions deteriorate in primarily Burman states?

Burma's "Agenda 21" plan for sustainable development, a document submitted to the U.N., even hints at this intention. In it, programs for "the development of border areas and national races" and reclaiming "cultivable wastelands" are described.[90] This reference to *taingyintha* is alarming within a sustainable development plan, and the plan may be coming to fruition. In the midst of the Rohingya crisis, the government announced that Rakhine state would be transformed into a business hub, and countries including Japan and Korea have already invested in the state.[91] A.K.M Ahsan Ullah and Diotima Chattoraj claim that to implement this development plan, "the government needed to wipe out Rohingya from their homeland."

New York Times reporters in Rakhine state in 2019 witnessed this development in action.[92] The reporters noted "infrastructure development in Rakhine: new power stations, government buildings and, most of all, military and border guard bases ... built on land emptied by ethnic cleansing," and found that Buddhists had taken over Rohingya businesses, that the military continues to raze Muslim villages, and that the companies responsible for the building boom were "cronies of the military." [93]

Rakhine state is not the only ethnic minority state in Burma where resources have been seized by the Tatmadaw. For example, in Kachin state, "resource extraction has provided incentive and financing" for the Tatmadaw and the Kachin Independence Organization (KIO) to keep fighting in a state rich with precious stones and minerals.[94] In Karen state, the Tatmadaw has used "intimidation and coercion to seize land and displace local people" in an area that is appealing for tourism, extractive, and agriculture industries.[95]

If the Tatmadaw are similarly pursuing resource gains in Rakhine state, who stands to benefit? While the government was known to enlist "Rakhine Buddhist fundamentalists to safeguard their interests in the resource-rich state,"[96] the Tatmadaw's own ongoing conflict with the Arakan Army calls to attention that in other ethnic regions facing conflict in Burma, "armed groups have often been manipulated against each other, weakening their military capabilities, and often causing them to lose control of their natural resources."[97] This raises the possibility that both ethnic minorities, Rohingya and Rakhine, could be excluded from any Tatmadaw development plan in favor of enriching the military's own pockets or benefitting solely the Burman majority.

In addition to this development plan, specific environmental events may have fueled the crisis; in particular, the aftermath of Cyclone Nargis had secondary effects on the Rakhine region. On May 2, 2008, Cyclone Nargis struck Burma's Irrawaddy Delta, located primarily in Ayeyarwady Region bordering Rakhine State.[98] Approximately 140,000 people were killed, making it the worst natural disaster in Burmese history.[99] The cyclone additionally destroyed much of Burma's rice crop, as the Irrawaddy Delta was one of the primary

regions of production, and saline water from storm surge contaminated about one million acres of cropland.[100] This caused severe food shortages and high prices, with one analyst predicting that due to "the historical connection between rice shortages and popular unrest … the cycle of explosive protest and regime crackdowns is likely to continue."[101] While Cyclone Nargis is the most severe example, other natural disasters such as 2010's Cyclone Giri and 2017's Cyclone Mora also worsened conditions. Cyclone Giri destroyed an estimated 97, 125 hectares of farmland in Rakhine State,[102] and Cyclone Mora—which hit the region after the refugee crisis began—tore through refugee camps. These natural disasters likely had a destabilizing effect on the region and intensified competition for resources.

The evidence in Burma of environmental scarcity, resource capture in ethnic regions, and devastating natural disasters aligns with the existing framework for how environmental stress may fuel violence, particularly as a threat multiplier on top of deep-rooted social and political elements. To further explore this claim, this crisis can be compared to another where environmental factors are frequently cited as playing a role: Sudan.

Comparative Case Study: Sudan

While the decades-long conflict in Sudan (and now South Sudan) began as an ethno-religious civil war between the predominantly Arab Muslim north and the African Christian south, the war has grown in layers of complexity over the years, and now environmental factors including drought and desertification are commonly recognized as exacerbating the violence.[103] Sudan gained independence from Britain in 1956, and like many other postcolonial states, Sudan was left with few routes to economic development beyond its natural resources.[104] An overconcentration of people in central Sudan led to severe degradation and overexploitation of the region, contributing "to intensifying ethnic hostilities and competition for limited resources."[105] Additionally, this motivated the northern-based government to drive southward to extract natural resources, jeopardizing the livelihoods of southern citizens and contributing to the formation of the Sudan People's Liberation Army in present-day South Sudan.[106] While violence in Sudan is still best characterized as an ethno-religious conflict, "eco-conflicts have clearly protracted the Sudanese war" as advantaged groups monopolize resources at the expense of the majority, resulting "in environmental destruction, economic decline, social disintegration, population displacement, and protracted conflict.[107]

How well does Sudan's situation align with Burma's? In both cases (see Figure 3 for a comparative flowchart) a former British colony with extreme ethnic and religious diversity was left with few tools for survival beyond natural resource use. For both countries, this led to overexploitation of resources in the central/majority-group-controlled regions, causing a drive for development in minority regions. Finally, in Sudan and Burma, these drives for development were followed by waves of intense violence within a longer history of conflict. However, there are some differences. For one, environmental pressure in Sudan is more severe, with a 2007 U.N. Environmental Programme report declaring that the scale of climate change was "almost unprecedented: the reduction in rainfall has turned millions of hectares of already marginal semi-desert grazing land into desert."[108] In comparison, Burma is in "a region less vulnerable to desertification," although aforementioned issues including soil erosion, salinization, soil fertility depletion, and alkalinization affect about 17

percent of the country, primarily in the central regions.[109] Another difference between Sudan and Burma is the presence of climate migration. In Sudan, drought, desertification, and flooding are *direct* causes of migration and internal displacement, as these issues force people to seek more arable land.[110] In Burma, there is little evidence that environmental factors directly cause IDPs and climate refugees, but environmental pressure may intensify the conflicts that produce refugees. Finally, the role of natural disasters is different in these two countries: Burma is vulnerable to unpredictable, one-time events such as cyclones, earthquakes, tsunamis, volcanic eruptions, and landslides, whereas Sudan is more vulnerable to long-term events such as droughts.

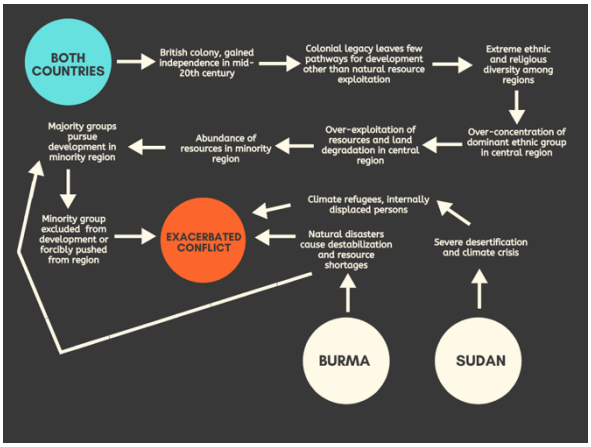

Figure 3: Infographic by Author

The case of Sudan helps exemplify how the Rohingya crisis fits the framework of a conflict with environmental layers, even if degradation in Burma is less severe than Sudan. While there is limited prior research on the role of environmental pressure in Burmese conflicts, there are clear similarities between Burma and Sudan where more scholarship on eco-conflict exists, thus displaying how a combination of ethnic tensions, unequal distribution of power, and resource scarcity fuels violence.

Environmental Impacts of the Crisis

Not only have environmental problems in Burma seemingly contributed to the past decade's flare-up of violence against the Rohingya, but the crisis itself has impacted the environment. As of August 2019, more than 730,000 Rohingya refugees are living in the world's largest refugee encampment in Bangladesh, a "teeming, squalid settlement" where landslides, rampaging elephants, and disease are common.[111] These camps put tremendous pressure on local ecosystems. About 4,300 acres of hills and forests were cut down to make shelters and to use as cooking fuel, and every month an additional nearly 6,800 tons of firewood are collected.[112] This deforestation causes biodiversity loss and increases the risk of landslides.[113] Additionally, air quality is declining as a result of increased vehicular traffic and smoke from cooking fires, and there are no long-term solutions for waste management including fecal matter and plastics.[114] This has resulted in the contamination of already-limited water resources, with about 70 percent of groundwater samples in a 2017 study found to be heavily polluted.[115] The poor environmental outlook for areas around the camps not only negatively impacts ecosystems and creates even worse conditions for the already suffering Rohingya, but risks additional conflict. A summary of physical impacts of the camps in a U.N. Development Programme report concluded that, "In particular the impacts on groundwater may give rise to significant social conflicts between the host communities and Rohingya over the use of water resources."[116]

Analysis of Causes

Few, if any, conflicts are one-dimensional. Conflicts consist of "numerous root causes interacting or stimulating each other and

finally escalating into the explosion … conflict is a process, not a fixed state of crisis."[117] In the case of Burma, the root causes of the Rohingya crisis are ethnic discrimination stemming from the British colonial era and religious discrimination intensified by the civilization "fault line" between Burma and Bangladesh. These root causes have resulted in systematic exclusion of the Rohingya from Burmese society, with a system of laws and policies denying them citizenship and basic rights. With this long history of exclusion, what factors incited the recent phase of violence, which peaked in 2017? While prior scholarship primarily cites societal changes caused by the 2011 democratic opening, the emergence of new Buddhist extremist groups, and propaganda efforts made possible by social media, increasing environmental pressure in Burma should be considered a factor as well.

In Burma, overreliance on natural resources, unsustainable government policies, and natural disasters including the devastating Cyclone Nargis have contributed to a situation of environmental stress, with the country's ecosystems, fisheries, and forestry coming under tremendous pressure.[118] One sign of this stress is land degradation in the populous central regions, and there is evidence that the Tatmadaw's solution to securing resources (whether to fund its own operations or for the majority ethnic and religious groups) is to exploit resource-rich ethnic minority states. For instance, Burma's Agenda 21 plan lists development of border areas and national races as a sustainable development program,[119] and resource capture is evident within conflicts in both Karen[120] and Kachin States.[121] That a similar seizure—rather than pure ethnic conflict—is unfolding in Rakhine state is evidenced by a recent harvesting push in the region for resources such as mangroves and an announcement by the government after the "clearance operations" of 2017 that Rakhine State would be transformed into a business hub.[122] This infrastructure development on land cleared by ethnic cleansing, with Buddhists moving in where the Rohingya were killed or forced out, has been witnessed by reporters in the region.[123]

Therefore, while violence against the Rohingya is mired in deep ethnic and religious division, codified in discriminatory policies, and has been foreshadowed for decades—most explicitly by a regime document with a long-term eradication plan for the Rohingya—environmental scarcity in Burma fits the framework for eco-conflicts as an "aggravating cause in a highly complex, multicausal system."[124] The environmental layer likely not only interacts with the long-term causes of the crisis, but also with other inciting factors. For example, Homer-Dixon's social segmentation process of heightened group identity in the face of resource competition may partially explain the emergence of players within the conflict such as Buddhist extremist groups or the Arakan army. Additionally, in the wake of the democratic opening, the Tatmadaw may have sought ways to strengthen itself after losing junta control, with lucrative foreign contracts for infrastructure development in ethnic regions a possible solution. And further, the Rohingya crisis' own environmental impacts including degraded land, water, and air in areas around the refugee camps risk a circular effect of starting new conflict with the host community. These are examples of the ways in which environmental factors may weave throughout a conflict to inspire new points of tension or exacerbate existing ones. While "because the relationship between environmental scarcity and contextual factors is interactive, it is often impossible to determine the relative weight or power of environmental scarcity as a cause of violence in specific cases," the evidence in

Burma leads to the conclusion that environmental factors must be considered within the dimensions of the Rohingya crisis.

Recommendations

The Rohingya crisis is often called a hopeless one. While in April 2018, Burma agreed to begin "voluntary and dignified repatriations," almost no Rohingya have returned.[125] The Rohingya are terrified to return to the site of mass killings, and Burmese officials still fail to even recognize them as a distinct ethnic group, much less citizens.[126] The September 2019 UNHRC factfinding mission on Burma found that there is a serious risk of genocidal actions recurring, and that it is impossible for the Rohingya to return in current conditions.[127] Meanwhile, the Bangladeshi government, struggling with overpopulation and poverty, is under pressure from its citizens to ensure that funds are not diverted to refugees, who have not been given official refugee status to ensure their placement is not permanent.[128]

General recommendations for addressing this conflict include repealing the 1982 Citizenship Law and offering an accessible path to citizenship for the Rohingya.[129] Additionally, Burma should close its internal camps housing Rohingya and provide them with adequate land and freedom of movement.[130] The UNHRC does not recommend returning refugees located in Bangladesh to Burma until adequate provisions for their protection exist.[131] International acts such as prosecuting Burma for crimes against humanity, severing relations between the international community and the Tatmadaw, and instituting sanctions to prevent the flow of arms and other military equipment into the country may pressure the government into action. The UN factfinding mission on Myanmar listed 14 known international suppliers of arms to Burma, which included companies based in China, Russia, India, and Singapore (see figure 4 for a chart of suppliers[132]). However, the practical limitations of these recommendations must be acknowledged, particularly in light of the February 2021 coup when the Tatmadaw regained control of the government. Despite being alienated from much of the global community and with genocide proceedings ongoing in the International Court of Justice, the Tatmadaw has only doubled down on suppression—not just for ethnic minorities, but all opposition.[133] In a country where officials still claim "'Rohingya' is not real,"[134] a better future within Burma's borders for the Rohingya seems far from reality.

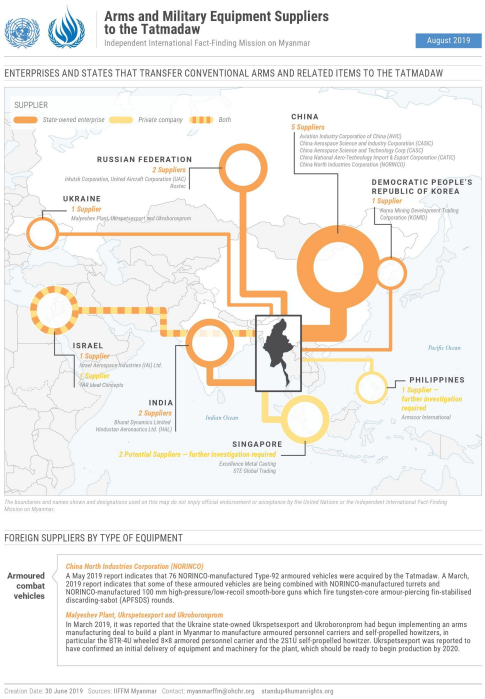

Figure 4: Infographic on arms and military equipment suppliers to Burma

Recommendations specific to environmental causes begin with addressing the underlying degradation. As Homer-Dixon writes, "if severe environmental damage becomes irreversible, it can become a permanent source of social stress; even if

the political and economic factors that originally produced the damage are fixed."[135] Between continued overexploitation of resources, population growth, and the accelerating threat of climate change, Burma must take action now to prevent permanent harm to the land and resources its people depend upon for survival. Actions such as restoring productivity to land through sustainable agriculture methods, diversifying crops, combating illegal logging and poaching, and improving urban conditions through waste management and air pollution projects can help improve Burma's environmental status. Additionally, Burma should move away from a largely natural resource-based economy as outlined in the country's Sustainable Development Plan. However, development projects must benefit all residents; specifically in Rakhine state, development programs "should take the necessary steps to ensure that their actions, first, do not enrich the Tatmadaw and, second, are of benefit to all the ethnic communities of Rakhine State on the basis of equality."[136] By addressing underlying environmental degradation, curbing climate change, and developing sustainably and inclusively, environmental issues could move far down the long list of factors causing conflict in Burma. Additionally, to prevent the degradation caused by refugee camps from perhaps fueling more violence, international aid should be directed to refugees to supply resources such as alternative fuel options and safe drinking water. Whether in a Bangladeshi camp or in the central regions of Burma, unmitigated deterioration of environmental conditions can only be expected to increase tensions in the region, possibly leading to further social segmentation, resource capture, and violence.

Conclusion

In this paper, environmental degradation in Burma has been examined as a factor in the ongoing Rohingya crisis. While the root causes of this conflict are long-term and systematic ethnic and religious discrimination, Burma's declining environmental status should be considered alongside the fallout of the 2011 democratic opening, a wave of Buddhist extremism, and propaganda spread through social media as an inciting factor. Limited prior research exists on the Rohingya crisis as an eco-conflict; however, through examining the location and extent of degradation and natural disasters in Burma, the government's stated plans for development, and the current situation in Rakhine State, a portrait of the environmental layers of the crisis can be painted. Additionally, the situation in Burma can be placed within the existing framework for the role of environmental scarcity in ethno-religious conflicts, with the Tatmadaw's actions in ethnic regions of Burma aligning with the concept of resource capture and showing how competition may contribute to social segmentation. Finally, a comparative case-study to conflict in Sudan sheds light on how while "environmental stress results in violent conflict only when interacting with other political, ethnic, economic, and social causes,"[137] (Lee, 1997), in both Burma and Sudan, resource scarcity and inequality led to worsening violence along existing fault lines. With few signs that Burma will soon turn to more sustainable resource use, and with climate change certain to aggravate natural disasters and land quality issues, action needs to be taken now to prevent the intensification of conflict in an already conflict-ridden country. The situation of the Rohingya in Burma provides further warning for other countries facing upheaval in how environmental stress may lace itself through

fracture points—a warning that must be heeded as environmental threats accelerate and intensify worldwide.

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