Impacts of Forcibly Displaced Myanmar Nationals on Cox's Bazar: Environmental Aspects

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Abstract

This research article examines the framing strategies employed by Bangladeshi newspapers to report on the Ukraine crisis, aiming to shape audience perception. The article sought to identify the categories of news presentation and analyze the emphasis placed on the reports from two national dailies, focusing on thematic and episodic aspects. The findings indicate that each newspaper adopted a distinct approach to conveying the crisis to its audience, highlighting differences in thematic and episodic news framing. Three specific frames were identified for episodic and thematic news after analyzing 294 news reports. The thematic frameworks included Political, Economic, and Humanitarian, while the episodic frames comprised Human Interest, Violence, and Military and Arms. The research also found that the newspapers predominantly relied on agency sources for their reporting.

Keywords: Episodic & Thematic Framing, Crisis frames, Ukraine crisis, Bangladeshi Newspapers

Introduction

The Rohingya are considered the world's largest stateless population (Kader & Choudhury, 2019). From 1978 to 2017, there were several expulsions of Rohingya in different consecutive years. From August 2017 to the present, more than one million Rohingyas have been compelled to migrate from Myanmar to Bangladesh, and the incident has been described as one of the fastest-growing Forced migration crises in the world. Bangladesh and Myanmar still have a positive relationship as neighbouring subregional countries in Southeast Asia. The massive influx of Rohingyas in Bangladesh's Cox's Bazar district has affected the environment and health of the local community. The Cox's Bazar is

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one of the major tourist areas in Bangladesh and it has the world's longest sea beach. This huge influx of people has put a massive strain on local areas of the environment and health (Shepherd, 1995). Bangladesh has already faced social, economic, and border challenges. Security and tourism issues also hamper the country's future (Bhattacherjee,2017). As the Rohingya influx has happened in Cox's Bazaar area, this area particularly faces environmental, economic, law, and order challenges. The local authority is not able to manage this huge Rohingya population properly (Hossain, 2022). The Rohingyas have been sheltered at the cost of random deforestation. For the Rohingya settlements, the surrounding area of the present Rohingya camps has lost a lot of forest area. It has resulted in land degradation, soil erosion, loss of drinking water, waste administration, deforestation, loss of biodiversity and biological systems, and natural disasters like landslides. In this paper, we have shown the impact of FDMN on Cox's Bazar's environment.

1. Background of Study

The Rohingyas are a Muslim ethnic group who have lived for centuries in Myanmar, a country with a Buddhist majority. The term "Rohingya" is derived from "Rohang," meaning "Arakan" in their dialect, and "ga" or "gay," meaning "from." About 1.1 million Rohingya currently reside in Myanmar. They speak Rohingya, a distinct dialect in the Rakhine state (Shepherd,1995). Identifying as Rohingya, this ethnic minority group asserts historical ties to the medieval Arakan Kingdom, believed to have originated in the early 9th century when Arab and Persian traders settled in Arakan (Shepherd, 1995).

RB Smart noted in the Burma Gazetteer (1917) that Rohingya have lived in Arakan since the 9th century, maintaining their language while adopting local customs (Ahmed, 2019). Professor Mohammad Ali Chowdhury of Chattogram University claimed that foreign settlers often married local women, and the Muslim population increased through intermarriages (Ahmed, 2019). Despite these historical ties, many Myanmar Buddhists regard Rohingya as illegal migrants from Bangladesh. Initially considered citizens in Myanmar, they were denied citizenship under the 1982 Citizenship Act, which excluded communities not listed in an 1823 British survey (Albert & Maizland, 2020). The citizenship crisis dates back to the British colonial era, which exacerbated ethnic divisions. Historically, Rohingya Muslims and Rakhine/Arakan Buddhists coexisted peacefully until British colonial rule and the First Anglo-Burmese War in 1825 changed local dynamics, leading to increased divisions. During WWII, communal violence erupted when the British withdrew. Japanese forces, along with Burmese nationalists, attacked the Rohingya, resulting in the "1942 massacre" where thousands were killed, and many fled to neighboring regions (Ahmed, 2019).

After WWII, the British did not fulfill their promise of a separate homeland for the Rohingya. In 1948, the Burma Territorial Force, composed of Magh troops, targeted Rohingya communities, causing a refugee crisis. The 1962 military takeover by General Ne Win further stripped the Rohingya of their rights, leading to more refugees fleeing to Bangladesh. Subsequent military actions and bans on Rohingya organizations and media further marginalized them, causing repeated exodus to Bangladesh, especially after the 1982 Citizenship Act (Kader & Choudhury, 2019).

By the 1990s, over 250,000 Rohingya lived in refugee camps in Bangladesh. Although many were repatriated to Myanmar in the early 2000s, the situation deteriorated again in 2015, leading to a significant influx of refugees by 2017 causing environmental damage in Bangladesh's border areas, particularly in Ukhiya and Teknaf, impacting local communities and biodiversity. The substantial damage inflicted upon natural and artificial forest coverage, with 3918 acres of natural and 1879 acres of artificial forest being affected by the presence of Rohingya people where (42%) of them rely directly on forest resources for cooking wood (Hoque et al., 2021). This sudden influx has strained resources and severely impacted the local environment, particularly in biodiversity-rich areas like Teknaf. Environmental effects include deforestation, soil erosion, water scarcity and pollution, habitat loss, waste mismanagement, and air and surface water pollution (Bashar, 2021). The strain on natural resources also leads to resource competition creating irreversible effects on the host environment (Ermansons et al., 2023).

2. Statement of the problem

The sudden arrival of 700,000 to 1 million FDMN to Bangladesh beginning in August 2017 created serious economic and environmental problems for the host country, especially in Cox's Bazar, aggravating an already difficult sociopolitical and economic situation. The environmental impacts in Cox's Bazar are significantly more serious and critical than currently realized by the Bangladesh government and all the multilateral and bilateral agencies (Biswas & Quiroz, 1996).

In 2017, hilly woodland made up 43.59% of the land use and land cover in the research region (Sarkar et al., 2023). Rohingya FDMNs have occupied public property by cutting down forests and hills to live in clusters. Providing rapid shelters in hilly forest areas without a baseline assessment has affected land use and land cover type. Forests decreased by about 9.58%, and settlements increased by about 8.25% due to the Rohingya camps (Sarkar et al., 2023). The loss of vegetation remained dramatic even after two years, mainly due to human

forest encroachment. Rohingya households currently require 750,000 kg of fuelwood per day, pressing surrounding forest resources (Haque, 2017). Reports indicate that 5013 acres of dense forest have been cleared so far, with 1876 ha of forested land lost between 2017 and 2019 in the Kutupalong and Balukhali regions (Imtiaz, 2018). The analysis found 1284.48 ha of vegetation degradation in the Teknaf sub-district within just four months of the influx. Vegetation loss and forest clearance have severely disturbed the ecosystems of Teknaf Wildlife Sanctuary, Himchari National Park, and Inani National Park, which are home to numerous vital or endangered species (Imtiaz, 2018).

Human activities by refugees have disturbed crucial ecosystems, resulting in human-animal conflict and increased risk of landslides due to deforestation and slope cutting. Thirteen fatalities and over 50 injuries to humans have occurred due to man-elephant confrontations (Rahman, 2019). Deforestation has led to a 1°C rise in land surface temperature, with an increase of 1.3°C in the Kutupalong-Balukhali region between 2017 and 2019 (Rashid et al., 2020).

Forest land converted to settlements has caused a decline in ecosystem service value. The total ecosystem service value decreased from US$67.83 million in 2017 to US$67.78 million in 2021 due to the increase in settlements (Imtiaz, 2018). The timber industry is predicted to lose US$5.33 million (21.97%) in economic surplus from ecosystem service value between 2017 and 2021 (Imtiaz, 2018). Deforestation also increases the risk of natural catastrophes like landslides, cyclones, and flash floods. There were declines in food production, raw materials, climate regulation, waste treatment, soil formation and retention, nutrient cycling, erosion control, biodiversity, genetic resources, recreation and tourism, and cultural ecosystem services. (Rashid et al., 2020).

The vast Rohingya FDMNs have fought for a place to live and harmed natural resources in Bangladesh's southern hilly region. The FDMN influx has affected the natural features of the Cox's Bazar area, such as forest cover, vegetation, and water bodies. The severity of natural feature loss will threaten Bangladesh in the long term. The depletion of groundwater, soil erosion, and excessive heat waves are some environmental problems surrounding Rohingya camps.

Additionally, poor waste management leads to air pollution as decomposing waste emits methane, a potent greenhouse gas. Contaminants from improperly disposed waste can seep into water sources, polluting rivers and oceans and harming the marine ecosystems of Cox's Bazar. Hazardous waste also degrades soil quality, introducing toxins into the food chain and groundwater, which causes many health problems in the camp area. Also, poor sanitation creates conditions for disease outbreaks, significantly worsening environmental and health impacts.

3. Literature Review

Mukul critically addressed the impact on the environment caused by the Rohingya refugee crisis in Bangladesh. He found that the expansion of refugee camps has led to severe deforestation, blocking important routes for endangered Asian elephants, and leading to human-elephant conflict, in addition, unregulated fuelwood gathering increases the strain on forests, impacting nearby communities and biodiversity. The author addressed that a long-term plan is necessary as negotiations for repatriation proceed with a forest and landscape restoration approach, integrating humanitarian and environmental interventions. This includes establishing fuelwood plantations and involving refugees and local communities in reforestation efforts with native species seedlings. Finally, the literature emphasizes the urgent need for comprehensive solutions for both humanitarian and environmental challenges (Mukul, 2018).

Mitu critically examined the necessity to integrate environmental, economic, and social approaches to sustainable development. Based on research from mid-2021, the author examined how this imbalance affects Rohingya refugee teenagers in Cox's Bazar, Bangladesh. She emphasized the area's susceptibility to extreme weather and how it affects teenagers owing to poverty and weak infrastructure. According to the author, these vulnerabilities put some Rohingya teenagers in danger of exploitation. She underlined the need to incorporate environmental components into policies and initiatives to help adolescents flourish. Finally, the author emphasized the importance of Rohingya teenagers taking an active role in policy discussions (Mitu, 2022).

Quader critically assesses the impact of the Rohingya refugee inflow on the Ukhiya sub-district in Cox's Bazar, Bangladesh. Using geospatial and survey data, it examines changes in forestry and sociocultural elements. According to the study, immigration substantially impacts the physical landscape, deteriorating local plantations and natural forests. From 2015 to 2018, forestry near the Kutupalong camps decreased by 11.23 km2, representing a 15.2% reduction in forest cover. Anthropogenic activities such as slope cutting and construction enhance the risk of landslides and flooding in the camps. Approximately 27.76% of the Kutupalong Refugee Camp and 9.61% of the Kutupalong expansion campground settlements are under threat. The report highlighted Rohingya refugees' reliance on wood as fuel, which contributes to deforestation. It asks for urgent forestry and environmental conservation (Quader, 2020).

Mehjabin studies the Rohingya displacement crisis, focusing on research related to the relocation of Rohingya refugees to Bhasan Char Island in Bangladesh.

This paper includes discussions on the background of the Rohingya crisis, the reasons for relocation, and the challenges faced by Rohingya refugees (Mehjabin, 2024).

Islam provides a comprehensive overview of existing research on the Rohingya influx and its socio-environmental crisis in southeastern Bangladesh. It would draw from various scholarly works to offer insights into the social and environmental dimensions of the crisis (Islam, 2021). Islam and Siddika provide an overview of existing research on the implications of the Rohingya relocation from Cox's Bazar to Bhasan Char, Bangladesh. It draws from various scholarly works to offer insights into the social, economic, and environmental dimensions of relocation. It summarizes previous studies on the Rohingya refugee crisis in Cox's Bazar, Bangladesh, including research on the socio-economic conditions in refugee camps, humanitarian assistance efforts, and challenges faced by host communities.

Islam, in his paper Environmental Cost: Rohingya Mass Exodus into Bangladesh, mentioned hundreds of thousands of Rohingya, a persecuted minority, sought refuge in Bangladesh, fleeing ethnic and religious strife and government persecution in Myanmar. Bangladesh has welcomed over 1.1 million Rohingyas, primarily settling in the Teknaf and Ukhiya camps. The camps they inhabit are largely located in forested areas, leading to environmental concerns. According to Cox's Bazar Forest office, approximately 6,125 acres of forest have already been cleared. Rohingya individuals are cutting down trees indiscriminately to create living spaces and pathways. This extensive deforestation is exacerbating environmental degradation in the region. The influx of Rohingya refugees has significantly impacted the hill forest areas of Cox's Bazar. These activities have resulted in environmental degradation, including increased risk of landslides, soil erosion, and vulnerability to cyclones and storms. Thousands of tube wells have been installed within Rohingya camps to meet their water needs. However, the over-extraction of water has resulted in a decline in the aquifer level, impacting the surrounding environment. Smoke from various sources, including traffic, firewood, and forest burning, contributes to pollution. Inadequate sanitation and crowded living conditions exacerbate the spread of diseases within the camps (Mahmud, 2020).

Afroz and Mahbub talk about Environmental Policy Issues and Public Health Concerns Associated with the Rohingya Population in Bangladesh. Rohingya refugees are the largest group of displaced people in Southeast Asia. Their influx has led to environmental degradation both in refugee camps and surrounding areas. The government expanded camps to accommodate refugees, resulting in over 2000 hectares of forest loss in Cox's Bazar. Fuelwood usage contributes to

deforestation, further endangering elephant habitats. Deforestation also threatens local biodiversity areas like Teknaf Wildlife Sanctuary and national parks (Afroz and Mahbub, 2019).

Mahmud discusses the Rohingya Influx, the Environmental Risk, and the growing concern for Bangladesh in his paper. Over 800 hectares of protected forest land and more than 2500 total hectares are slated for Rohingya accommodation in Teknaf and Ukhiya. The environmental impacts are wreaking havoc on local communities, biodiversity, and ecological balance. This extensive land use plan is directly encroaching on wildlife habitats. Future biodiversity is under threat of destruction. Such anomalies can contribute to global warming (Mahmud, 2020).

Mohammad opines that the presence of Rohingyas in Bangladesh since 2017 has caused serious environmental, national security, and terrorism-related problems. These include environmental destruction, food and water scarcity, lack of clean water, desertification, soil erosion, loss of wildlife, and extinction of traditional livelihoods.

Since 2017, the Rohingya have set up camps on 6,000 acres of state land, including forests and hills.. The encroachment resulted in the destruction of approximately 4,818 acres of forest reserves, affecting both natural and cultivated forests. This had a huge impact on the environment of Bandarban district. The leading cause of deforestation is the collection of firewood; Rohingyas use more than 750,000 kilograms of wood, trees, and roots as fuel for food every day. In Cox's Bazar, where the majority of Rohingya people live, approximately 700 tons of wood is used every day, causing massive deforestation. an environmental impact conducted in the Cox's Bazar Forest subdivision area, highlighting the urgent need for international cooperation to solve these problems. Urgent measures are needed to address environmental damage in refugee camps in Cox's Bazar to preserve biodiversity and ensure the health of refugees and local communities. Cooperation between the governments of Myanmar and Bangladesh and UNHCR is important in resolving the Rohingya problem and protecting Bangladesh's biodiversity and natural resources (Mohammad, 2020).

However, while the existing literature discusses various aspects of environmental issues related to the Rohingya crisis, this study will focus more on the environmental impact of waste pollution and inadequate sanitation. Poor waste management releases harmful human-made gases, worsening environmental degradation already caused by deforestation and other factors. At the same time, it will examine the legal aspects related to environmental problems caused by the refugee crisis, which have yet to be thoroughly explored.

4. Research Questions

a) Does the poor waste management and sanitation in Rohingya camps exacerbate environmental degradation? How about rephrasing it to - Could the inadequate waste management and sanitation in Rohingya camps significantly worsen ecological degradation?

b) What legal measures can be taken to restore the ecosystems? - What legal strategies can be implemented to restore our ecosystems effectively?

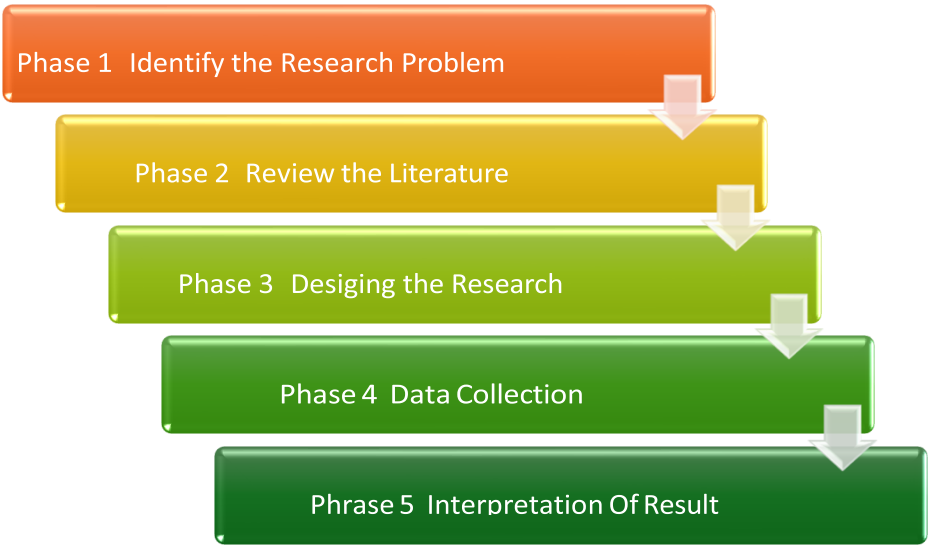
5. Methodology

The study primarily used quantitative research methodology to assess the environmental impact of Rohingya camps, which involved several structured phases. The first stage was formulating the research problem, which began with clearly defining the issue to be studied. In the next stage, a thorough literature review was conducted to understand the context and background of the topic. A sampling method, such as stratified random sampling, was chosen to determine the sample size and technique to ensure all stakeholder groups were represented.

A structured questionnaire with both open-ended and closed-ended questions was prepared for interviews.

This study was based on primary data, and for the Data collection, structured interviews were conducted with Forcibly Displaced Myanmar Nationals (FDMN), members of host communities, and community leaders in the Kutupalong- camp 1 and Camp 7 areas of Ukhiya from February 10, 2024, to February 15, 2024. Additionally, inquisitive key informant interviews were conducted with government officials from the Refugee Relief and Repatriation Commissioner (RRRC), non-governmental organization representatives, and journalists. These interviews were initially conducted in Bengali and the local languages of the FDMN people and later transcribed into English for analysis. All the Responses are recorded using standard methods to ensure they can be easily quantified.

Descriptive statistical analysis methods are then used to analyze the data to test the answers to the research questions. Interpreting the results involves discussing the statistical findings in the context of the research questions. Furthermore, the study incorporated secondary data from sources such as online journals, newspaper articles, and international NGO reports to comprehensively analyze the environmental situation.



6.1 Data Sources

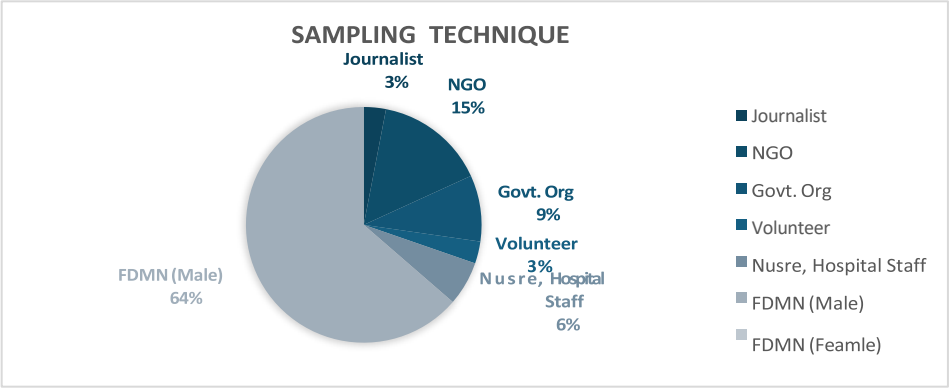
The researchers conducted thorough fieldwork to ensure the highest quality of outcomes. A considerable amount of factual data from the Office of the Refugee Rehabilitation and Repatriation Commissioner was accumulated from an in-depth question-and-answer session.

In addition, the research involved interviews with journalists from both national and international media, as well as numerous activists from various non-governmental organizations (NGOs) and international non-governmental organizations (INGOs). A noteworthy aspect of the primary data collection was the extensive interviewing of over a hundred Forcibly Displaced Myanmar Nationals (FDMNs). These interviews used a carefully designed questionnaire to capture the respondents' genuine perspectives and insights.

Furthermore, the research included interviews with key administrative figures, specifically the Camp in Charge of Camp No. 7 and the Camp in Charge of the Kutupalong Registered Camp. Secondary data sources also played a crucial role in the research. A substantial number of Scholarly articles, particularly those classified as Q1 or Q2 in academic rankings, were reviewed and incorporated to provide additional context and support for the findings. This comprehensive approach to data collection and analysis ensures a robust understanding of the environmental impacts surrounding the camp areas in both the pre-and post-relocation contexts.

7.1 Sampling Technique

This paper utilizes random sampling to ensure that every segment of the Rohingya population has an equal chance of being selected for the survey, thereby allowing the results to be generalized to the entire population. We have collected data from 35 stakeholders, such as journalists, NGO workers, Government organizations, and the FDMN habitats from Nayapara and Kutupalong camps. It is essential to highlight that gathering data from FDMN women was challenging, given the cultural conservatism prevalent in the community.



8.1 Data Interpretation Formula

Primary data, essential for an in-depth investigation, was collected from key stakeholders, including Rohingya individuals, RRRC Officials, NGO workers, Journalists and locals.

personnel involved in the issues of the Rohingya people. Adapting one-to-one interviews as the primary data collection method, the research aimed to extract nuanced perspectives and insights. The analysis will adopt a thematic approach and comparative analysis techniques, showing the data in different forms of Graphs and Pie Charts that contain detailed information segregated according to distinct categories.

9.1 Methods of Interviews

Semi-structured interviews were used to gather information for this paper. This approach involved asking open-ended questions to gain comprehensive insights while allowing participants to reflect on relevant topics. The interviews were

held in various locations, including the participants' homes, community centres, and open areas inside and outside the Rohingya camps regarding environmental changes, particular environmental difficulties, effects on day-to-day activities and livelihood, and solutions to these difficulties. Ethical consideration was maintained throughout; all provided information was kept strictly confidential. The interviews were recorded and enhanced with comprehensive field notes.

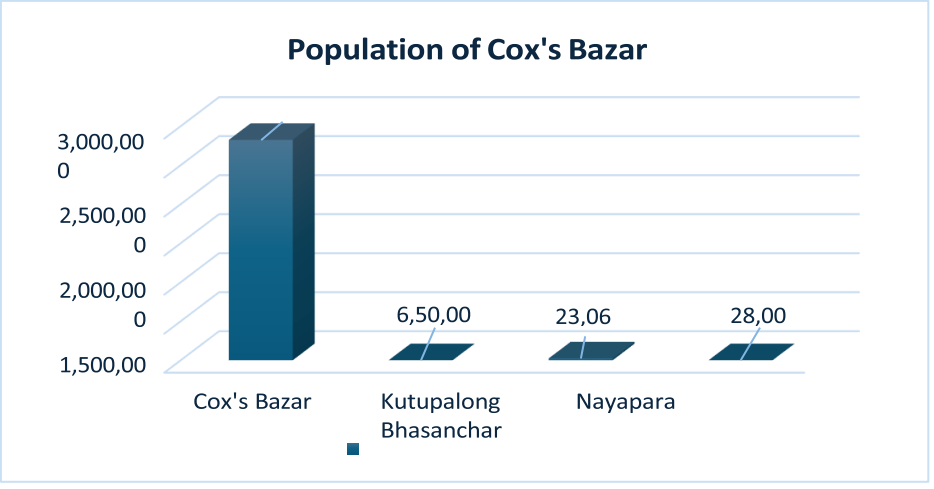
10.1 Demography of the Study:

According to the 2022 Census of Bangladesh, Cox's Bazar District had 587,127 households.and a population of 2,823,265, 43.6% of whom lived in urban areas. The population density was 1,133 people per km^2 (UNFPA, 2023).

Other than that, the influx of over 700,000 Rohingya refugees into Cox's Bazar, Bangladesh, in 2017 has had a significant impact on the local environment and ecosystem. Most FDMN in Cox's Bazar, Bangladesh, live in the Kutupalong and Nayapara camps, some of the world's largest and most densely populated.

Camps. Kutupalong is the world's largest refugee camp, housing around 6,50,000 Rohingya refugees.

The Bangladeshi government aimed to assuage UN concerns and provide international assistance to the refugees. Approximately 28,000 Rohingya refugees have been relocated to Bhasan Char as of May 2022 (Hossain & Janmyr, 2022).



We can analyze the population statistics and the impact of this refugee crisis on the surrounding ecosystem to create a demography for the Rohingya refugee area and understand its effect on the environment.

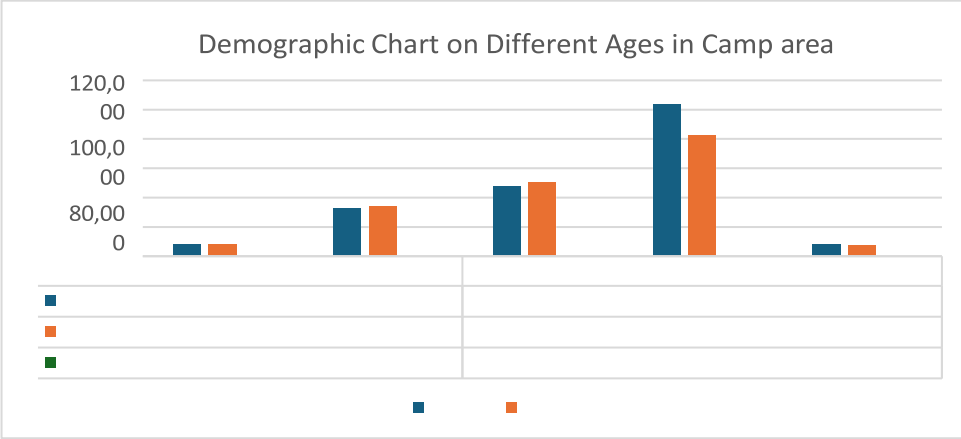
5.1.1 Population Demographics of Rohingya Refugees:

The FDMN population in Bangladesh is estimated to be over 960,000, with a majority settled in and around Kutupalong and Nayapara refugee camps in Cox's Bazar (NetHope, 2022).
The adult male population (18-59) in the Rohingya refugee camps is 181,605, with a significant number seeking jobs (Razzak, 2022) (USA for UNHCR, 2023).
The refugee population consists of 52% children, 51% women and girls, and one-third of the total population in the Cox's Bazar region. The refugee population growth rate in the camps is estimated at 3.77% annually, potentially reaching about 1.30 million by 2032.

5.1.2 Age and Gender Distribution:

The family counting exercise collects the total declared size of each family and the total size of the family physically verified by the enumerator during the count. Based on the total declared size of the family, the data is collected on the number of individuals within the family as per the age-sex cohort below. As of 30 October, 54% of the total population counted are children (under 18 years old); specifically, 19% are under five years old. While 52% of the total population are women and girls, there are more adult females aged 18 years and above (25%) compared to adult males (21%). Among the children under 18 years old, there does not seem to be a significant discrepancy by sex, with 51% of children being boys and 49% of children being girls (UNHCR Data Portal, 2024). From the information of all camp areas, here is the total count of the population of FDMN based on Age and Gender-

<1 years (Infant)	Female- 8,126	Male- 8,133
<1-4 years	Female-33,019	Male-34,059
5-11 years	Female-47,296	Male-50,218
12-17 years	Female-29,330	Male-29,986
18-59 years	Female-103,469	Male-82,580
60+ years	Female-8,090	Male-7,341



	<1 years (Infant)	<1-4 years	5-11 years	18-59 years	60+ years
Female	8,126	33,019	47,296	103,469	8,090
Male	8,133	34,059	50,218	82,580	7,341

5.1.3 Family Structure:

A typical Rohingya family has four or five surviving children, with some cases recording up to twenty-eight children. The average family size in the refugee camps is 4.8, with about 35,000 babies born annually. The camps are densely populated, with up to 318 people per acre, and 93% of the population lives below the UNHCR emergency standard of 45 square meters per person.

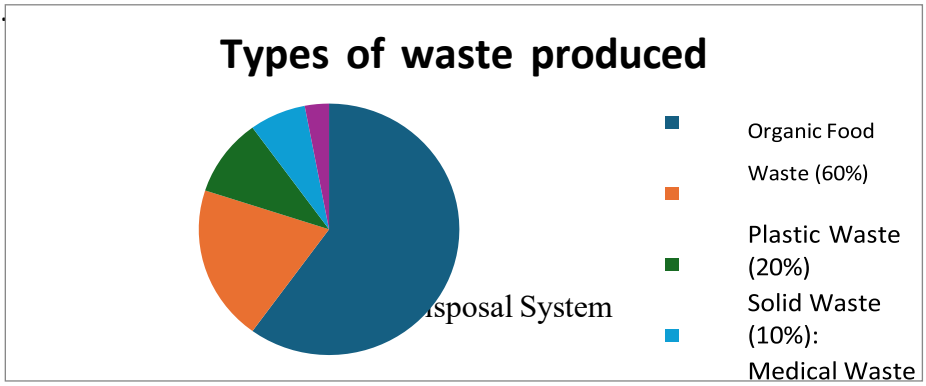
6. Impact of Waste and Sanitation Mismanagement on the Environment

6.1 Waste management in camp areas

The significant number of populations of FDMNs in the Ukhiya camps generates a substantial amount of waste, estimated at 10,000 tons per month (Sandulache, 2019). This study on Camps 1 and 7 in Ukhiya reveals that inadequate sanitation and poor waste management significantly contribute to water and air pollution, resulting in health issues like waterborne diseases and malnutrition. The camps produce diverse waste types. Among these, organic food waste is theMost prevalent. According to a study, almost all participants

(30 out of 35) in both camps identified organic waste as the primary type of waste they generate daily.

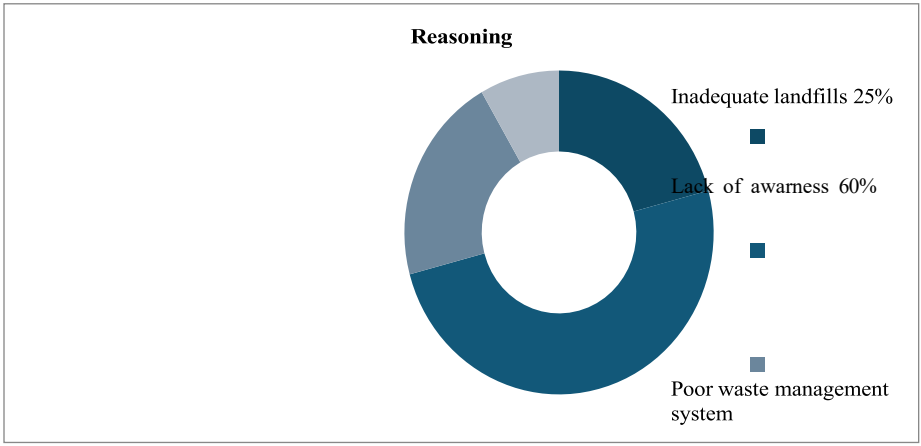
Organic food waste, comprising 60% of the total waste in both camps, consists of the Organic Fraction of Municipal Waste (OFMSW) from food and household items. Other significant waste categories include plastic waste (20%), solid waste (10%), medical waste (7%), and various other waste types (3%) such as electronic waste and textiles.



Open waste dumping and congested drainage systems are significant issues in the Rohingya camps, leading to blocked drains and flooding. Moreover, they contribute to flooding and waterborne diseases such as Diarrhea, Dysentery, Jaundice, and Cholera. This study shows that only 30% of people dispose of their waste properly in the dustbin and landfill sites, whereas almost 70% throw it in open areas.



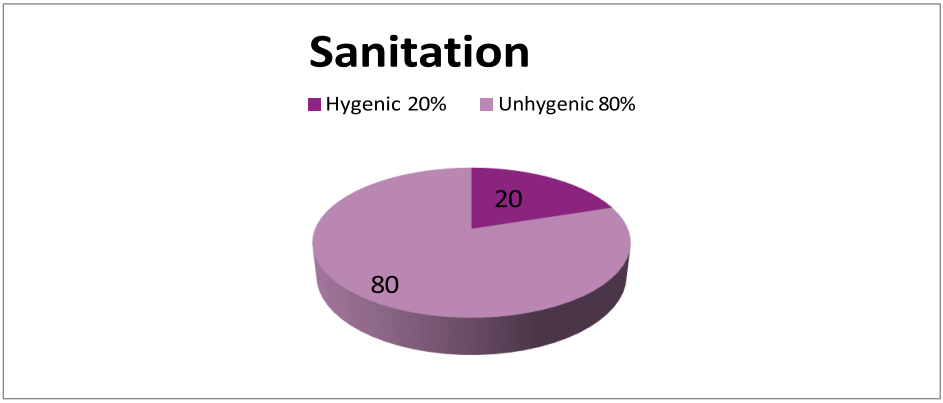
6.2 Reasoning of waste pollution in camp areas



Due to the inadequacy of landfills relative to the large amount of waste produced and the inefficiency of the waste management system, waste is polluting the environment in the camp areas. Among 35 people, almost 20 people, which means almost 60% of them, are not aware of water and air pollution, thus polluting the environment through waste pollution. Almost 25% of people agreed that they have inadequate landfills and a poor waste management system.

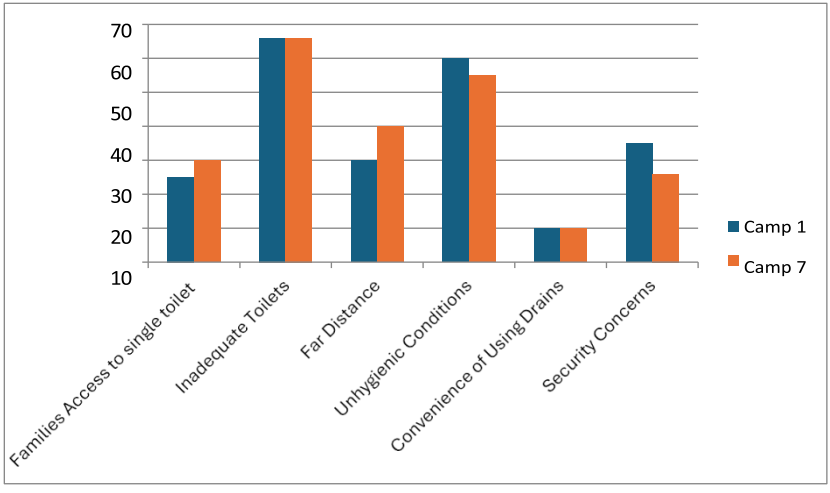
6.3 Sanitation in the Camp Areas

The camps are home to many FDMSs, resulting in an extremely high population density. This puts immense pressure on the existing sanitation facilities, which are not designed to accommodate so many people. Both Camp 1 and 7's sanitation systems are considered unhygienic. According to this study, 80% of the respondents in both camps agreed that the sanitation facilities were not up to standard.



6.4 Challenges of Sanitation Facilities

Many Rohingyas in the camps do not use toilets due to several factors. Only about 25% of families in Camp 1 and 30% in Camp 7 have access to a single toilet, which indicates a shortage of sanitary facilities. Additionally, 66% of residents reported insufficient toilet availability, leading to overcrowding and poor maintenance. Distance is also an issue, with 30% in Camp 1 and 40% in Camp 7 finding toilets too far from their homes. Unhygienic conditions deter use, with 60% of toilets in Camp 1 and 55% in Camp 7 reported unsanitary. Some residents prefer using drains for convenience, and security concerns, especially for women, prevent 35% in Camp 1 and 26% in Camp 7 from using the toilets. Camp 1 is notably more vulnerable due to limited sanitation access, poor conditions, and higher security risks.



6.5 ENVIRONMENTAL IMPACTS DUE TO WASTE POLLUTION AND POOR SANITATION

The poorly managed waste and inadequate sanitation and waste management system in the Rohingya camp area in Ukhiya. Cox's Bazar has severe environmental impacts, which include:

Water Pollution (Groundwater and Surface Water Pollution)

Groundwater is the primary source of drinking water. However, human waste and other pollutants from open defecation or leaky pit latrines seep into the soil and contaminate the groundwater sources. This affects the quality of water used for drinking, cooking, and washing and creates serious health risks. Moreover, improperly disposed waste and runoff during rainstorms carry contaminants into nearby streams, ponds, and rivers. This pollution harms aquatic ecosystems and makes the water unsafe for the camp people.

Soil Degradation

The presence of human waste in the soil introduces harmful pathogens, spreading diseases among humans, animals, and plants. Waste contains chemicals that, when improperly disposed of, leach into the soil, affecting its composition and fertility. This makes it difficult to grow trees or crops or support natural vegetation, hampering reforestation as well.

Air Pollution

The decomposition of organic waste and open toilets contributes to air pollution and decreases the quality of life for camp residents. As proper waste recycling is not widely possible, waste is often left unfolded, polluting the air. Organic waste, when decomposed anaerobically (without oxygen), produces methane, a potent greenhouse gas that contributes to climate change, which is a significant threat not only to camp areas but also to the whole country.

Spread of Disease

Pollution creates breeding grounds for mosquitoes, flies, and other disease vectors that can spread malaria, dengue fever, and cholera. Residents in direct contact with contaminated soil or water are at higher risk of contracting illnesses, skin problems, eye irritation, etc.

Flooding and Drainage Issues

Accumulated waste often clogs drainage systems, leading to waterlogging and flooding. Flooding caused by blocked drains can lead to soil erosion, degrading the land and impacting agriculture and vegetation.

Impact on Biodiversity

Contaminated water and polluted soil can destroy habitats, reducing local biodiversity. Animals drinking or eating contaminated sources may get sick, poisoned, or die. Ongoing pollution can cause severe environmental damage.

Several mitigation measures can be implemented to address the environmental impacts of poorly managed waste and inadequate sanitation in the Rohingya camp areas. Improving sanitation infrastructure by increasing the number of sanitary facilities and ensuring their regular maintenance is essential for effective waste management. Proper waste management practices, such as implementing waste segregation, collection, and disposal systems, can significantly reduce pollution.

08. Legal implications

08.1 International Legal Implications

International environmental law addresses the prevention of ecological destruction and biodiversity loss in refugee camp areas through broader environmental agreements and specific guidelines and policies tailored for humanitarian settings. Several international frameworks and guidelines incorporate environmental considerations into the management of such areas as the following-

08.1.1 United Nations High Commissioner for Refugees (UNHCR) Environmental Guidelines 2005:

The UNHCR Environmental Guidelines aim to minimize refugees' impact on the environment through the following principles-

1. An integrated approach: Refugee and returnee-related environmental problems stem from sudden imbalances between the displaced population's needs and the environment's capacity. Proper planning and institutional actions are essential for integration, with ongoing efforts to incorporate environmental factors into routine operations and budget considerations.

2. Cost-effectiveness and net benefit maximization: UNHCR's efforts to address refugee environmental issues must be efficient and effective, considering the limited resources. They need to prioritize interventions that positively impact the environment relative to the resources invested. To do this, it's essential to evaluate the value of environmental assets and services at risk during refugee and returnee assistance operations, whether in monetary terms or otherwise.

3. Local participation: Local participation includes encouraging refugee community leaders to raise awareness and take responsibility for protecting the environment, supported by UNHCR through education and awareness projects. Refugees should also be encouraged to participate in environmental programs, such as adopting fuel-efficient stoves or reforestation and agroforestry practices, especially when introducing recent technologies or environmentally friendly practices.

Moreover, UNHCR should lead efforts to mobilize funds for environmental matters, ensuring a consistent approach to prevent or address ecological impacts in refugee situations. Donors should be made aware of refugee-related environmental issues early on, and funds from bilateral development assistance should be explored for use in UNHCR or national programs. UNHCR is responsible for integrating environmental considerations into its decisions and activities, promoting environmental protection and rehabilitation with governments, and coordinating efforts among all parties involved. Other UN agencies should also integrate refugee-related ecological concerns into their policies and programs.

8.1.2 Polluter Pay principle- The "polluter pays principle" (PPP) states that those who cause pollution should bear the costs of measures to fix it, as outlined in Principle 16 of the Rio

Declaration. This principle is significant in the context of the Rohingya refugee situation because Myanmar, as a signatory to the Rio Declaration, is responsible for environmental damage resulting from the influx. Therefore, under the PPP, Myanmar has an obligation to cover the expenses of remedying the damage caused.

8.1.3 NO harm principle—This principle is considered customary international law and applies to all states. It means that a state must not cause environmental harm to another state. Therefore, in addressing environmental damage caused by the Rohingya refugee influx, measures can be taken to ensure accountability for any harm caused.

During the Gulf War of 1991, Jordan faced severe environmental damage as 1.38 million refugees with 1.8 million animals overgrazed desert vegetation, causing long-term harm to 7.1 million hectares and negatively impacting native fauna (Conflict and Environment Observatory, 2016). Jordan has raised concerns about the environmental degradation caused by the large influx of Syrian refugees and requested $160 million in compensation to rebuild these destroyed rangelands from the UN Compensation Commission (Conflict and Environment Observatory, 2016).

8.1.4 The Convention on Biological Diversity (CBD)

The Convention on Biological Diversity (CBD) aims to conserve biological diversity, ensure the sustainable use of its components, and promote the fair and equitable sharing of benefits from using genetic resources.

According to Article 7, countries must identify key important biodiversity components for conservation and sustainable use. They must also monitor these components, focusing mainly on those needing urgent conservation or those offering significant potential for sustainable use. Article 8 of the Convention on Biological Diversity mandates that countries manage and conserve critical biological resources, protect

Ecosystems and natural habitats support sustainable development in areas adjacent to protected zones and restore degraded ecosystems to aid threatened species. The convention addresses the impact of migration, emphasizing the need to prevent and control invasive species that threaten local ecosystems. Under Article 20 of the convention, developed countries have obligations to provide financial resources to help developing countries implement national-level activities related to biodiversity conservation. These obligations include providing financial support and incentives, covering incremental costs, and offering resources through various channels. Therefore, measures are needed to conserve biodiversity in areas like Cox’s Bazar and Teknaf Wildlife Sanctuary, which are affected by environmental impacts from the Rohingya refugee influx.

The United Nations Framework Convention on Climate Change (UNFCCC) requires developed countries to give extra financial help to developing nations to support them in meeting their environmental responsibilities.

8.1.5 The Paris Agreement

Article 4 of the Paris Agreement states that all countries must work towards their individual targets for reducing greenhouse gas emissions. Developed countries are also asked to assist developing countries, recognizing this. Article 5 of the Paris Agreement calls for action to conserve and improve greenhouse gas

sinks, including forests. Parties are encouraged to support existing frameworks for reducing emissions from deforestation, enhancing forest carbon stocks, and managing forests sustainably. This concerns forest degradation and deforestation in the affected areas in camps.

8.2 Domestic Legal Implications

The National Environmental Policy of 1992 and the National Environmental Management Plan of 1995 also emphasize ensuring environmental safety while complying with international standards.

9. Findings

The impact of the FDMN influx is manifold, from socio-economical to environmental; it has tapped into almost every aspect of the camp region and beyond in Ukhiya (Joyotu et al., 2023). The community that once welcomed the FDMN with open arms now reports them to be responsible for creating problems for the host community (Ullah et al., 2021). The data collected reveals significant environmental degradation in the Ukhiya camp area of Cox's Bazar, particularly within Kutupalong-1 and Camp 7. The following key findings were observed:

i. Ineffective Waste Management: The Rohingya camps in Ukhiya generate considerable monthly waste, primarily organic food waste, followed by plastic. Nonetheless, waste disposal systems are inadequate, with only 30% of waste being disposed of properly. This leads to widespread open dumping and clogged drainage systems, which contribute to flooding and waterborne diseases. Despite the collective effort of the Government and NGOs, the waste management system is yet to be effective, as it plays a significant role in environmental pollution on-site and outside of the camps.

ii. Poor sanitation in the camps puts additional pressure on waste management. The maximum number of families do not have access to a toilet, and many toilets are overcrowded, unhygienic, and located far from homes, creating security concerns, particularly for women.

iii. The environmental impacts include severe water pollution from contaminated groundwater and surface water, soil degradation from waste-leaching chemicals, and Air pollution from decomposing organic waste. Flooding caused by blocked drainage systems further degrades the land, affecting agriculture and vegetation. Poor sanitation and waste management exacerbate the spread of diseases like malaria and cholera.

iv. - International legal frameworks like the UNHCR Environmental

Guidelines, Polluter Pays Principle, and Convention on Biological Diversity provide avenues for addressing these environmental impacts, particularly in the camp areas—the international community.

v. Reforestation is not the Solution: NGOs, INGOs, and SMS have taken annual and bi-annual initiatives to plant trees and promote them, but these initiatives come with many restrictions and reservations. Besides, reforestation programs might compensate for the significant loss of trees, but they will not effectively reduce the harm already caused.

vi. Lack of Knowledge and Interest: FDMN people, after battling to ensure the 'basic needs' of life, do not find environmental harm or degradation interesting, nor do they have the adequate knowledge to comprehend the effects of environmental degradation.

vii. Impact of Relocation: The relocation of FDMN to Bhashanchar did not significantly change the environment of the camps in Ukhiya.

10. Recommendations

i. Improved waste management practices, better sanitation infrastructure, and enhanced environmental awareness among camp residents are crucial to mitigating the ongoing environmental degradation in the Rohingya camps. Invest in improved and stable waste collection and processing facilities within the camps. This includes building modern Waste management infrastructure and establishing efficient waste collection routes. Develop recycling programs to reduce waste volume and create economic opportunities.

ii. Develop a comprehensive plan for long-term environmental restoration in the Ukhiya region involving soil regeneration programs, habitat restoration initiatives, and periodical EIAs, and collaborate with local experts on ecosystem rehabilitation.

iii. Relocation, being a sustainable approach, will be more effective if done by a more significant number of people and in less time. Collaboration is required by the Government, NGOs, and FDMN people to ensure a smooth and safe transfer. Moreover, strict family planning policies can be implemented to control the population. Community leaders can play a vital role in disseminating information, mobilizing residents, and fostering a sense of shared responsibility for the environment.

iv. Bangladesh can adopt a coordinated approach like Jordan's response to the Syrian crisis. Creating a national platform involving government ministries,

UN agencies, and NGOs can help align efforts to address the environmental, social, and economic challenges caused by the Rohingya refugee crisis. This platform would enable better planning, efficient resource use, and stronger environmental oversight.

v. Filing Reports to International Bodies: Filing a report on environmental and humanitarian concerns to the UNHRC. The national body collaborating with UNHRC can investigate the ecological impacts and recommend measures or sanctions. To do this, raise the issue in the UN General Assembly to garner international support and press Myanmar to address the environmental problems in refugee camps.

vi. Promote Community-Led Environmental Initiatives: Encouraging refugee and host communities to participate in environmental protection efforts can ensure tremendous success. Local participation in activities such as reforestation, waste recycling, and Adopting fuel-efficient technologies can help mitigate environmental impacts while providing economic opportunities.

vii. Legal actions Before International Courts: A case was already filed against Myanmar to ICJ by Gambia to prosecute the acts of genocide against the Rohingya people. (The Gambia v. Myanmar) According to the report, if Myanmar's actions violate international environmental agreements, any legal action can be taken against Myanmar under international environmental law to seek compensation for the ecological loss.

viii. Leveraging Environmental Agreements: Myanmar's compliance with global environmental treaties, such as the Paris Agreement or Convention on Biological Diversity, could be scrutinized. States parties to these treaties can hold Myanmar accountable for failing to prevent or mitigate environmental harm caused by displaced populations. Even if the environmental impact disproportionately affects women and girls in refugee camps, CEDAW could be invoked to address gender-specific impacts and advocate for more comprehensive protective measures.

ix. Engaging in Diplomatic and Developmental Pressure: Use diplomatic pressure and negotiations to persuade Myanmar to improve environmental management in refugee camps. This could involve bilateral or multilateral discussions with other countries and international organizations. Advocate for targeted sanctions or conditions on international aid related to environmental management. This could involve influencing donor countries and organizations to tie aid to improvements in environmental practices.

x. Increase International Cooperation and Funding: Bangladesh should seek more international cooperation to fund environmental projects that address the impacts of the Rohingya crisis. Global support can help implement long-term solutions for restoring damaged ecosystems and protecting natural resources. Support From International Organizations, NGOs, and civil society organizations focusing on environmental protection and humanitarian rights are highly needed. These groups can help them and amplify the call for financial aid, accountability, and action against Myanmar's ecological practices. Promote global awareness about the environmental impacts of refugee camps to increase pressure on Myanmar and international bodies to act. The traditional approach to managing humanitarian crises tends to treat ecological issues as less important, can worsen environmental quality and public health, and lead to instability in the camp. Therefore, integrating ecological protection into crisis responses should be a priority for sustainable recovery.

11. Conclusion

The arrival of many displaced people in the Ukhiya camps has caused serious environmental problems. Rapid population growth, poor waste management, and inadequate sanitation have severely polluted the water, soil, and air. Key findings reveal extensive deforestation, ineffective waste management, and environmental degradation, exacerbating health risks and biodiversity loss. Despite efforts like reforestation programs and relocation initiatives, the situation remains dire, with many residents unaware of or uninterested in environmental issues due to their focus on basic survival needs. Educating camp residents on hygiene and proper waste disposal practices is essential to mitigate environmental impacts. Another crucial step is to prevent water sources from becoming contaminated by improving infrastructure planning and management. Collaboration with the government, non-governmental organizations, and environmental groups can also aid in monitoring and reducing the effects of pollution and waste. As a result, the camp areas can improve their ecological pollution control and sanitation system and create a healthier, more sustainable living environment for its residents.

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