



The Environmental Implications of the Rohingya Refugee Crisis in Bangladesh

Md. Abdul Halim ^{a*}, Sumiya Majumder Rinta ^b, Md. Al Amin ^c, Azmira Khatun ^a
and Adnan Habib Robin ^d

^a Department of Business Administration, Mawlana Bhashani Science and Technology University, Bangladesh.

^b Department of International Relations, Bangladesh University of Professionals, Bangladesh.

^c Department of Accounting, Mawlana Bhashani Science and Technology University, Bangladesh.

^d Department of Economics, National University, Bangladesh.

Authors' contributions

This work was carried out in collaboration among all authors. Author MAH has written the draft paper, Lead the Author's, Idea sharing, implication and revised the final manuscript, author SMR draft writing, Literature review, data collecting, author MAA introduction and conclusion, author AHR data and writing methodology. Author AK gathered data and revised the final manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Purpose: The main focus is to find out the environmental challenges that Bangladesh is dealing for the huge influx of Rohingya refugee people to Bangladesh. The research also aims to assess the dynamic situation of the crisis, identify the roles of Bangladesh government, NGOs as well as the International Organisations' for Rohingya refugee crisis.

Methodology: This study is context-dependent on information and an inductive data analysis. The paper uses a descriptive qualitative approach case study design that focuses on primary and secondary data showing the real ground of crisis. Data has been collected from the interviewees

and experts. This research sets multiple methods of data collection including documents, policy, and historical analysis.

Findings: Environmental imbalance occurred due to allocating 1,000 acres forest land for providing shelters to the refugees. Reserve forest has been destroyed endangering wild elephants. And it is causing landslides in the area, soil erosion, water scarcity, extreme heat wave, extreme rainfall, drought, deforestation, air pollution, and so on.

Conclusion: This research leads to identifying the areas which have already been affected. The plans that need to work on to overcome the problems and that could provide necessary and sustainable solutions for Rohingya refugee. This study also could let people know the catastrophe Bangladesh is dealing and the impacts which can cause the ecological imbalance and failure the biodiversity of the areas in a greater way. This paper could bring benefit to society and make people conscious about the environment and also make them raise voices for the conservation of environment.

Keywords: Rohingya refugee crisis; environment; threat; biodiversity; Bangladesh.

ACRONYMS

UN	: United Nations.
UNDP	: United Nations Development Programme.
UNHCR	: United Nations High Commissioner for Refugees.
NGO	: Non-Governmental Organization.
WHO	: World Health Organization.
FAO	: UN's Food and Agricultural Organization.
RRRC	: The Office of the Refugee Relief and Repatriation Commission.
EETWG	: The Energy and Environment Technical Working Group.
IOM	: International Organization for Migration.

1. INTRODUCTION

The massive influx of Rohingya refugees happened in 2017. This huge influx of people has put a massive strain on local areas and the environment. Bangladesh already has been facing challenges from social, economic, and environmental perspectives. There are security, tourism issues that are also hampering the country's future. As Rohingya influx has happened mainly in Cox's bazaar area, the area faces so many challenges. The local authority is not being able to manage this huge Rohingya population properly. A huge number of deforestation has been done to shelter the Rohingya. Just about 6,000 sections of land had been deforested by the Rohingya camps [1]. Land degradation, soil erosion, loss of drinking water, waste administration, deforestation, loss of biodiversity and biological system, natural disasters like landslides as a result of

tremendous numbers of Rohingyas refugee. Bangladesh is a nation of 160 million people, the most thickly populated on earth is presently spending more than \$1 million daily to maintain its health and security endeavours. Bangladesh is providing shelters to those brutally persecuted Rohingyas. The locals and the people of Bangladesh are bearing the burdens of Rohingyas despite undergoing extreme poverty. Bangladesh is facing so many challenges for this Rohingya crisis and cannot ignore that. The researchers interacted with stateless Rohingya individuals and they informed us about their torments, how the Myanmar armed force was tormenting and killing them and how they came to Bangladesh crossing the line. They mentioned why they are not interested in going back to Myanmar because of the Myanmar government's negligence and disinterest in providing citizenship status to Rohingya refugee people. They said how they were deprived of education; they were allowed to study till grade eight. Myanmar army burnt their houses and their legal documents said respondents. But their arrival to Bangladesh brought problems and threats for Bangladesh, especially on the environment.

This study focuses on the environment that is being hampered greatly by the crisis. This influx of refugees has made an extra ecological emergency in Bangladesh's border area. Bangladesh is getting hampered in social, economic, and environmental perspectives. Moreover, this study addresses how the environmental impacts of the Rohingya refugee crisis on Bangladesh caused great havoc and how it affects the local people, biodiversity, and ecological balance of the area, and what the Bangladesh government needs to do regarding this matter. The research problem is identifying

the area on which the research should focus for. The Rohingya refugee people are recognized as stateless from Rakhine State, Myanmar. The Myanmar government didn't recognize them as citizens. They were persecuted in their own country. On October 22, 2017, the UN reported that approximately 603,000 refugees from Rakhine, Myanmar, had crossed the border and came into Bangladesh since August 25, 2017¹. They are currently mentioned as the most persecuted minority in the world. Bangladesh government has given shelter to persecuted Rohingyas, but the Bangladesh government's obstacles are countless. Sometimes it is causing them great havoc. Bangladesh is facing a resource problem because of the burden of Rohingyas refugee. The natural resources are also being destroyed for these large number of Rohingya minority. Over 4,000 acres of lands are used for sheltering Rohingya refugee people. There is depletion of ground water, soil erosion, and excessive heat wave and so on in the area².

Here the research problem is finding the environmental problems created for the persecuted Rohingya refugees surrounding Rohingya Camps. And how are these problems affecting Bangladesh? What major initiatives need to be taken from Government to protect the biodiversity of the affected areas? Is Bangladesh going to face a huge ecological disaster shortly? Is there the possibility of creating environmental conflict for the crisis? Are the donations enough from the different organizations and countries to deal with the problems? These are the research areas in this study, and the possible solutions to the problems that will be based on these areas.

2. THE ROHINGYA REFUGEE CRISIS IN BANGLADESH

2.1 Refugees

According to the United Nations, refugees are forced to leave their country because of persecution, war, and violence. Refugees fear persecution because of race, religion, nationality, ethnicity, political opinion, or membership in a particular group³. They cannot return to their homes for fear. For getting refugee status, they

will have the reasons of fleeing from their native country.

2.2 Rohingya

They are most persecuted minorities in the world. Rohingya an ethnic group in Myanmar based on the Muslim majority. The Rohingya speak as Ruaingga. Myanmar's government has not given them citizenship. They are called stateless. They don't have an official identity like the other 135 official ethnic groups in Myanmar. They live in the western coastal state of Rakhine, and they are not allowed to leave without government permission. Myanmar's government and military have been violating Rohingyas' rights since Myanmar's independence. From 1978, Rohingyas started migrating to neighboring countries; they have displaced people⁴. The rapid influx of Rohingya people happened in Bangladesh in 2017 after the persecution from the Myanmar military on the Rohingya minority. They mostly fled to Bangladesh. However, Bangladesh government has not given them refugee status yet officially.

This figure (Fig. 1) shows that how Rohingya people have been coming towards Bangladesh since the 1990s. And later since 2007, the number of people has been increasing but in 2017, it drastically enlarged⁵.

2.3 Refugee Crisis

That refers to the movement of the large group of displaced people who can be displaced internally, forcefully, or other types of migrants. According to UNHCR, many people migrate to safer countries for communal violence, conflict, persecution, human rights violence in their country of origin⁶.

2.4 Effects/Crisis of Rohingya Settlements

Bangladesh is an overpopulated country. Bangladesh's government faces a demographical challenge for overpopulations. But after the influx of Rohingya into Bangladesh, the challenges got doubled to tackle. In camp, it

¹ <https://timesofindia.indiatimes.com/world/china/china-to-mediate-on-rohingyas-between-myanmar-and-bangladesh/articleshow/61728311.cms>

² <https://www.iom.int/news/iom-fao-re-plant-bangladesh-forest-repair-environmental-damage-caused-refugee-influx>

³ <https://www.unhcr.org/what-is-a-refugee.html>

⁴ <https://synergies.oregonstate.edu/2018/rohingya-refugee-crisis-a-student-perspective>

⁵ <https://www.iom.int/news/iom-fao-re-plant-bangladesh-forest-repair-environmental-damage-caused-refugee-influx>

⁶ <https://www.unhcr.org/what-is-a-refugee.html>

has been notified by organizations' members' that infants are increasing in the camps daily. In Kutupalong, about 880,000 Rohingya refugees live, where half of them are children and this Rohingya crisis is considered as the world's largest and fastest people's movements⁷. And the present population of Bangladesh is about 166,316,200, and the Rohingya population has added an extra burden to this developing country. And in the ongoing pandemic, the situation got worsened because of overpopulation in the camp areas. In the last three years, about 76,000 babies have been born in Rohingya camps (Nearly 76,000 Rohingya babies born in Bangladesh's camps in 3 years, 2020⁸).

The aforementioned has become a big concern for the Bangladesh government. The government is facing financial shortages for the huge number of Rohingya people. Bangladesh's government is seeking international assistance to deal with this problem, but the assistance is less than expected. The local people have been hitting by the unemployment problem as refugees dominate the local labor markets. In Ukhiya and Teknaf, wages were reduced by 20 percent where it had risen by 6.7 percent in other parts of Cox's Bazar [2]. The crime rates have risen in Cox's Bazar district after the arrival of Rohingya. There are crimes such as murder, smuggling, abduction, extortion, sexual harassment, etc. In 2018, the figure was 208 cases, and in 2019, it rose to 263; 178 cases have already been filed against Rohingyas in the first seven months of 2020. And several crimes go unreported⁹. The loss is irreparable, as experts mentioned. Already the local area faced a huge impact from the rapid influx of Rohingya¹⁰.

There is usually no potential benefit for Bangladesh for Rohingya settlement. Bangladesh had already gone through a lot of troubles for accepting Rohingyas. Bangladesh's government helped for humanitarian purposes, but the consequences are huge. Still, the repatriation process has not started. Myanmar is not interested in taking them back. And the international community is not helping Bangladesh properly in the negotiation process;

instead, international media is negatively coloring the Bangladesh government nowadays for sending Rohingyas to Vasanchor in recent times. About 18,800 refugees have been moved from Cox's Bazar region in recent times. And another 80,000 will move soon in the Chor. The Human Rights organizations are blaming the Bangladesh government as the refugees on the island could be exposed to terrible conditions during the monsoon season, and also according to Human watch, they are struggling with "inadequate" health and education facilities on the island¹¹.

Rohingya people have been coming into Bangladesh since the 1970s, but the rapid influx happened in 2017. If the Bangladesh government cannot succeed in the repatriation process in the future, it will create a huge problem for the long term. Already the consequences are huge, and in the future, could double it. The terrorism threat, environmental degradation, demographic, social problems will not be lessened but increased in the long run [3]. The old Rohingya residents who came into Bangladesh are permanently living in Bangladesh, and the way the repatriation process is failing, they might stay here permanently. And the Rohingyas are not interested in being back in Myanmar, and the Myanmar government has no concern for their citizenship. Now Rohingyas are concentrated in Cox's Bazar district, but they will split and go to different parts of Bangladesh if they stay permanently. Some of them are already traveling using Bangladesh passports, and in the long period, it will go out of hand, not to mention. Bangladesh's government has to give them education and job opportunity if they stay permanently. That will create huge chaos as day by the Rohingya population will increase, not decrease [4].

Bangladesh's government should act more cautiously. The diplomatic pressure on the Myanmar government needs to be increased, and strong negotiators who can create impacts need to be in the negotiation process to act more profoundly. Bangladesh should try to manage to have superpowers support to add pressure on Myanmar. Bangladesh needs to create more diplomatic pressure as the situation is getting worse day by day. Bangladesh government should reach a term for long time benefit and repatriate Rohingya as early as possible.

⁷ <https://www.worldvision.org/refugees-news-stories/rohingya-refugees-bangladesh-facts>

⁸ <https://www.thedailystar.net/rohingya-crisis/news/nearly-76000-rohingya-babies-born-bangladeshs-camps-3-years-1950709?amp>

⁹ <https://www.thedailystar.net/rohingya-crisis/news/nearly-76000-rohingya-babies-born-bangladeshs-camps-3-years-1950709?amp>

¹⁰ <https://www.iom.int/news/iom-fao-re-plant-bangladesh-forest-repair-environmental-damage-caused-refugee-influx>

¹¹ <https://www.worldvision.org/refugees-news-stories/rohingya-refugees-bangladesh-facts>

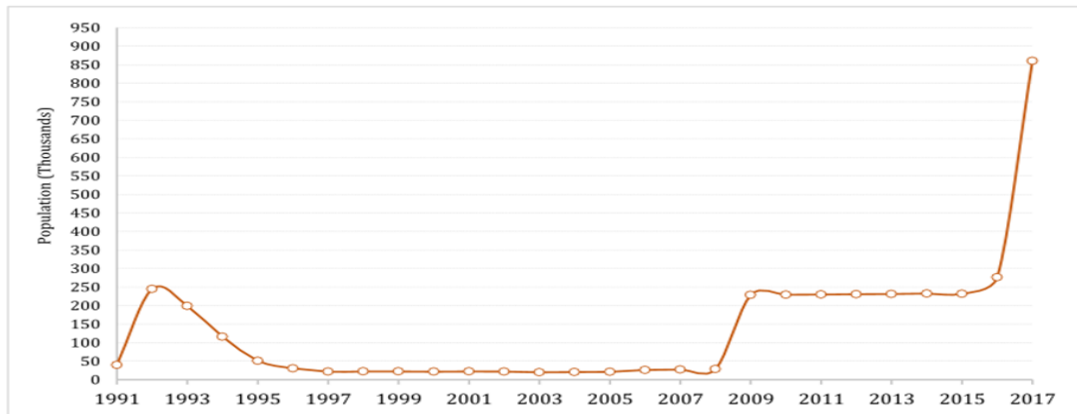


Fig. 1. Rohingya influx in Bangladesh since 1990s

3. LITERATURE REVIEW

3.1 The Story Behind the Rohingya Crisis

In October of 2017, the Myanmar military started ethnic cleansing on persecuted Rohingyas. They were indiscriminately killing Rohingyas. About 1.1 million people were fleeing to Bangladesh from their Northern border for surviving. Bangladesh is already an overpopulated country of the world. But Bangladesh government came forward for their humanitarian sense. It opened up a massive refugee camp known as Kutapalong in a previously forested section of the country. Many of the 800K+ refugees are cutting down trees for staying warm, cooking foods, and earning from the forests around them, but that led to a massive amount of deforestation¹². The hillsides are bare after cutting down trees from that area, which could lead to landslides at any time when the monsoon period would come¹³ [5] 1,625 acres of forestland has been occupied in Ukhia and 875 acres of forestland in Teknaf and more than one million trees have cut down to make way for their huts¹⁴, "Because of the rampant use of fossil fuel, the Cox's Bazaar area is already at severe risk of climate change. The region often witnesses either extreme rainfall or extreme drought conditions. The sea has already swallowed low-lying areas," - Biswajit Sen, a local environmental activist, mentioned.

¹² <https://www.iom.int/news/iom-fao-re-plant-bangladesh-forest-repair-environmental-damage-caused-refugee-influx>

¹³ <https://synergies.oregonstate.edu/2018/rohingya-refugee-crisis-a-student-perspective>

¹⁴ <https://www.iom.int/news/iom-fao-re-plant-bangladesh-forest-repair-environmental-damage-caused-refugee-influx>

Deforestation in Rampant led wildlife to danger and increased animal attacks in the region [6-7].

In this map (Fig.2), the complete focus of this study has mentioned. How the crisis has started and then the rapid influx of Rohingya into Bangladesh, crisis of resources, international concern, impacts on the environment, and government actions for environmental degradation have shown.

3.2 Rapid Environmental Degradation

These huge numbers of refugee camps are causing environmental destruction for Bangladesh. This rapid expansion of camps and the deforestation of the forest led to ecological disasters and threatened wildlife habitats. Teknaf Wildlife Sanctuary, Himchari National Park, and the Inani Protected Area are in danger. Firewood collection is a threat for this area that will lead to the destruction of the environment. Soil erosion, agricultural land pollution is happening. The rainwater cannot pass for the camps¹⁵ [8]. Teknaf area is already facing the water crisis. The groundwater is much deeper, and the deforestation led to more water crises in that area. A Shallow quarter tube-welled water has already dried up, latrines are beside the tube wells, and leaking the latrines is polluting the groundwater¹⁶ [9]. Deforestation deprived host communities' access to firewood, timber for housing, and forest fruits, and other non-timber forest products. There should be taken necessary steps like reducing risks and

¹⁵ <https://scroll.in/article/864580/the-rohingya-refugee-crisis-has-brought-an-environmental-crisis-in-bangladeshs-border-area>

¹⁶ <https://scroll.in/article/864580/the-rohingya-refugee-crisis-has-brought-an-environmental-crisis-in-bangladeshs-border-area>

balancing ecosystems and also help them to get proper knowledge. Government should engage them in works, create employment. Immediately restore damaged grounds and hills to facilitate later replanting and slope stabilization (Social Impact Assessment of the Rohingya¹⁷ [10]. The report from Bangladesh Forest Department says that Rohingya took over 5,013 acres' forest land. They are cutting trees indiscriminately. In total, 3,517 acres of forestland have been destroyed, including 1,199 acres of artificial forests and 2,318 acres of natural forests. A total of Tk4, 112,862,671 worth of damage has occurred, including Tk2,138,853,414, and Taka 1,974,009,257 to the artificial and natural forests [6]. That is leading to soil erosion and land sliding possibilities, mostly in the rainy season. The government is looking for a low cost of coal (LPG) for Rohingyas to conserve the environment. Human-Elephant Conflict (HEC) has been raised because of Rohingya arrivals in the reservation lands. That is bringing environmental conflict [6,2] According to FAO, eight hundred tons of fuel woods need every day for Rohingyas. They are collecting green woods also for cooking that is usually unhealthy for a human. Local Bangladeshis requested a petition to the government to compensate them for the lost land. If this continues, the environment of that local area will be devastated. There is a need for sustainable solutions with easing relations of two communities, local and Rohingya¹⁸. UNDP has pointed out the serious impacts of the Rohingya crisis on the Bangladesh government as 1.1 million people have come to Bangladesh. In the local area, there is a higher degree of environmental degradation already. UNDP published a report and pointed out six physical impacts and seven risks to the ecosystem and recommended 19 mitigation measures to reduce the environmental degradation and restore the lives of Cox's bazaar area. Four thousand three hundred acres' forests and hills cut down, and Rohingya people are continuously collecting woods for cooking, repairing their temporary shelters, and other activities. More than 4,000 acres of hilly lands area have been affected; there was vegetation in the Teknaf-Ukhiya-Himchhari. UNDP is focusing on measures like alternative fuel, solid waste management. Their report said to go for sustainable solutions for the conservation of the

environment¹⁹. Approximately 45,000 trees and around 700,000 grass cuttings have been done by Rohingya and local people in Cox's Bazaar to balance the environmental degradation. IOM and FAO projects take initiatives to plant other 36,500 trees and million grass cuttings in upcoming days. The Office of the Refugee Relief and Repatriation Commission (RRRC), combined with the Bangladesh Forest Department, UN agencies, and NGO partners, finds ways to stabilize soil and replant trees in the local area. According to the Energy and Environment Technical Working Group (ETWG), around 200,000 saplings have been planted by humanitarian agencies. This project will help thousands of refugees and local people for their livelihood and restore the environment²⁰. The higher degree of deforestation of Cox's bazaar area leads to rapid environmental degradation day by day. The environment is getting polluted on a larger scale. According to a report published in the Lancet, a journal produced by The Lancet Commission on Pollution and Health, the highest death rate for environmental pollution happens in Bangladesh and India [11] That is a huge threat for Bangladesh [11,7]. Cox's bazaar is the poorest district in Bangladesh. Because of the Rohingya crisis, this small area is facing lots of problems. The Prime Minister of Bangladesh has pointed out the environmental impacts on Bangladesh in a meeting of world leaders in France. She said that we gave them shelters for humanity, but Bangladesh is in danger because of the effect on forests and the environment. The ecology and biodiversity of the area are destroyed day by day. Moving them towards "Char" areas can have brought more problems as those areas are flood-prone.

3.3 Theoretical Foundations

There are so many conflicts in the world regarding environmental problems. Bangladesh might face such kinds of problems for refugee crisis if it does not take necessary steps right now to protect the environment from being destroyed. This study will analyze this assumption using Homer Dixon's Environmental Scarcity and Violent Conflict theory. There are three propositions in theory. Firstly, supply-induced scarcity is caused by the degradation

¹⁷https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/assessments/171207_social_impact_assessment_and_rapid_host_community_impact_assessment_summary.pdf

¹⁸ <https://scroll.in/article/864580/the-roghingya-refugee-crisis-has-brought-an-environmental-crisis-in-bangladeshs-border-area>

¹⁹ <https://www.iom.int/news/iom-fao-re-plant-bangladesh-forest-repair-environmental-damage-caused-refugee-influx>

²⁰ <https://www.iom.int/news/iom-fao-re-plant-bangladesh-forest-repair-environmental-damage-caused-refugee-influx>

and depletion of environmental resources. Secondly, Demand induced scarcity is caused by population growth and increased per capita consumption. Thirdly, Structural scarcity by unequal distribution of wealth [12].

That goes with the environmental problem that Bangladesh is facing now. There could be an environmental conflict between refugees and native Bangladeshi people that will be measured by analyzing the present context of the refugee-hosting area with the help of the propositions of Homer Dixon's theory [12]. Another theory that can also relate to this topic is Realism. Realism talks about national interest. The state is considered the unitary actor. Individual and organizational powers are limited here. Decision-makers are rational actors, and their rational decision-making focuses on national interests [13]. Bangladesh government is bearing all these problems regarding Rohingya, taking rational decisions in terms of national interests. Bangladesh has been being praised worldwide for giving shelter and other needs to Rohingya people; it is also getting huge donations from international authorities. The government is getting international attention for humanitarian purposes. So this can relate to Realism as well.

4. RESEARCH METHODOLOGY

4.1 Research Approach

This paper targets the Rohingya refugee crisis from Bangladesh's perspective, how Bangladesh's environment is being affected. The first step was to create drafts of research problems and what issues need more focus and find out the existing literature regarding the topic. That is a detailed research focuses on an arena. That is based on literature and expert interviews. This bounding of the study is consistent with the descriptive qualitative case study design. So, this study was based on qualitative data collected from both primary and secondary data sources.

4.2 Research Instruments

This study is context-dependent and based on relevant information inductive data analysis, information from expert interviews, questions asking session, audio recording, observational data, visual materials, and documents collection. This research sets multiple methods of data collection, including documents, policy, and historical analysis.



Fig. 2. Conceptual Map

4.3 Data Collection Procedure

Being a qualitative study it deals with both primary and secondary data. And some descriptions have been collected from primary data from the Rohingya refugee camp and some secondary materials like existing research papers, articles, videos, journals, documents to find out the problems regarding the crisis and its effects on the environment. This process was chosen because models and variables were not available and very few books are available on this topic. So, observational data, visual materials, and documents were collected from the interviews for data sources and information. The information was noted down from informants. Preliminary drafts were prepared to include in the final study [14].

4.4 Data Analysis

The data analysis procedures are making drafts and summarizing field notes. This qualitative research consists of preparing and organizing data, identifying codes and quotes, stating and contextualizing the framework from literature, and representing data in figures, tables, or a discussion and then taking notes, displaying tables and charts, creating a point of view for theoretical perspectives and then analyzing the findings. Moreover, verifying the descriptions and interpretations later by taking preliminary drafts.

This study had a time frame of about 2018-2020 year. The interviews have been taken from the experts who are currently studying and analyzing the Rohingya issue and working on the Rohingya camp. Research data are collected from them to know about the new information that is missing in the literature. Several questions were asked during interviews regarding the impacts on the environment because of the rapid influx of Rohingya in Bangladesh as well as what types of environmental catastrophe Bangladesh could face shortly because of environmental pollution and the ultimate solutions to these problems, and so on.

5. RESULTS ANALYSIS AND DISCUSSION

Rohingya refugees are coming to Bangladesh since the early 20th century, but the rapid influx of Rohingyas happened in 2017. This influx brought huge environmental imbalance with more significant impacts in other areas too. That has become a considerable concern for

Bangladesh. The government had to allocate more than 1,000 acres of forest land for Rohingya refugees by cutting trees and making their shelters. A significant number of people are creating pressures on land that are bringing a threat to the environment. The forest in Cox's bazaar was the reserve forest where wild elephants were used to live.

Still, because of the massive influx of refugees, elephants are losing their homes, and they are becoming wild and attacking people as the forests are destroyed²¹. Add to that, the muddy area is prone to landslides as hills are excavated for sheltering Rohingyas. In the monsoon period, the threat is even for them. Because of firewood burning, air pollution is increasing day by day. Almost 500 lakh kgs of firewood are burning every day in the camps for cooking [7]. The sun heat of the area has risen more than before. The Water crisis has been increasing day by day. The water level is getting lower; refugees are not getting water for their livelihood [9]. Soil erosion is a serious environmental threat for that area because of the massive uprooting of trees. In Cox's Bazaar, 45,000 trees have been planted for repairing the loss of the environment. The UN Migration Agency (IOM) and UN Food and Agriculture Agency (FAO) initiated the project by planting 36,500 trees and million grass cuttings²². Bangladesh's Forest Department coordinates with the Office of the Refugee Relief and Repatriation Commission (RRRC), UN agencies, and NGO partners to stabilize soil and replanting trees in the area, which once used to be national forest land. Humanitarian agencies have planted around 200,000 saplings for energy and environmental activities in Cox's Bazaar. They are also providing stoves for Rohingyas that they could not cut the wood. This project would also assist the host community in improving the environment and work for reforestation²³. There is poor management of solid waste and degradation in the wildlife habitats and human-wildlife conflicts and rampant use of fossil fuel, risk of climate change, extreme rainfall, or extreme drought conditions. The sea has already swallowed the low-lying areas, and the impacts on marine and freshwater ecosystems are

²¹ <https://www.thedailystar.net/backpage/unemployment-hit-hard-cox%E2%80%99s-bazar-local-community-after-rohingya-refugee-influx-1794076?amp>

²² <https://www.iom.int/news/iom-fao-re-plant-bangladesh-forest-repair-environmental-damage-caused-refugee-influx>

²³ <https://scroll.in/article/864580/the-rohingya-refugee-crisis-has-brought-an-environmental-crisis-in-bangladeshs-border-area>

reducing the growth of local crops. The UNDP suggested providing alternative fuel for cooking, restoration of degraded ecosystem, and good management of waste and other degraded measures. That needs immediate action for the restoration of the environment. There is limited funding for the conservation of the environment in Cox's bazaar area. That required more financing and sustainable solutions and long-time efforts to survive a healthy environment²⁴.

Repatriation is a need for Rohingya people. That can be the ultimate solution to solve the refugee problem in Bangladesh. Bangladesh should go for more fruitful diplomacy to repatriate them. That turned into a national crisis. To protect Bangladesh, one of the most popular tourist spots from overpopulation, needs more international cooperation and collaboration from the government, civil society, NGOs, private sectors, etc. Restoration of the ecosystem is most required to conserve the environment of that area as it is already damaged a lot, and the atmosphere is gesturing for future catastrophe. From the interviewees and visiting the local site, Bangladesh is immensely in a threatened position from both environmental and social perspectives.

Environmental degradation is getting higher day by day. It has seen how the local area is devastated by uprooting trees, burning woods, and cutting hills from the reserve forest area where no one was allowed to come before. But now it is destroyed. The pressure on the ground of these vast numbers of Rohingya people on cutting hills is enormous, and at any time, there could be landslides. The latrines are here and there in the camps, and leaking resulting in polluting the water. The groundwater level is getting lower. People are already not getting water properly from that area. Rohingyas are cutting trees indiscriminately for their livelihood, cooking, and using them in their shelters. It has seen how adults were cutting trees and carrying woods with their children. And the scorching heat of the sun of that area has become intolerable because of the vast deforestation. The waste management in the camps is so poor. Rohingyas are dumping waste here and there in the camps. That is polluting the air and water and creating soil erosion. The shelter materials in the camp

area are not disposable. And drinking water is carrying through a plastic container that is also not disposable. That is harmful to the environment. Many people are arriving daily in the camps across the country and outside also to visit Rohingya. NGO workers, officials from international organizations, private organizations, and others, are giving them aid, providing facilities, educating the children. But all are less concerned about the environment. The local area can face the highest environmental catastrophe at any time. The local climate has almost been devastated; local people are depriving of their rights for Rohingya. Rohingyas are uprooting their trees. They are sometimes coming out from the camp area and selling their aid in Cox's bazaar city. That is creating massive chaos in Cox's bazaar city, and the tourist arrival has reduced than before in Cox's bazaar after Rohingya arrival. A considerable traffic problem is faced by Cox's bazaar local people because of the influx of many people in a small area. Their patience is getting lower day by day.

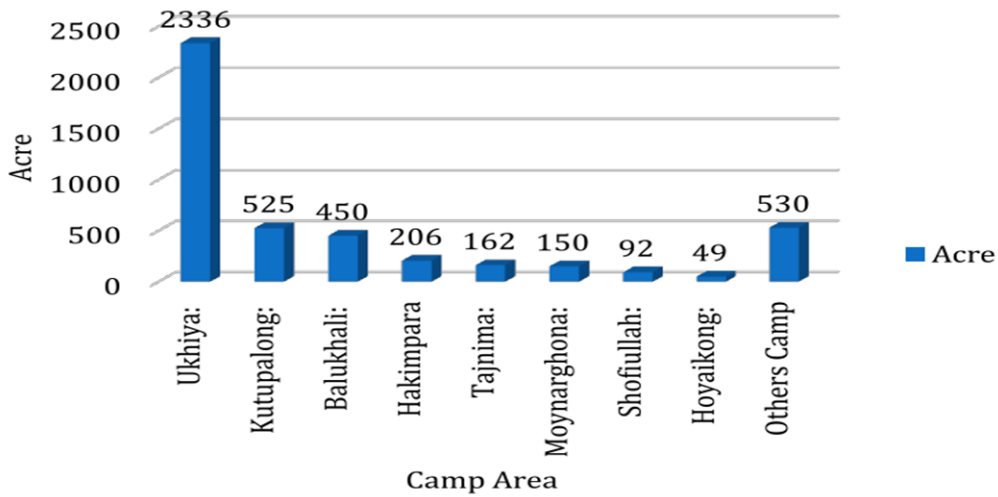
For protecting the Bangladesh environment, there is a need for a sustainable solution. Voluntary repatriation of Rohingyas can only solve the problem ultimately. Bangladesh needs to take proper diplomatic decisions and policies to solve the problem as early as possible from the view of national interest. Humanitarian aid is essential but not as important as the nation wellbeing, which is under immense threat because of the vast number of refugees' arrival from the environmental, social, economic perspectives.

5.1 Policy Implications

This study first needs to assess the Rohingya refugee crisis, the root of their problems. How they were persecuted in their land, how they fled to Bangladesh. And that became the challenge for Bangladesh to tackle the refugee influx. That brought a great impact on Bangladesh, especially on the environment. However, there are many benefits for Bangladesh. Bangladesh is praised in the international arena for its humanitarian sense.

Bangladesh is getting hampered in social, economic, and environmental perspectives. In this study, the environmental perspective of concern. Questions to be answered include: How the environmental impacts of the Rohingya refugee crisis on Bangladesh caused great havoc? How it affects the local people,

²⁴https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/assessments/171207_social_impact_assessment_and_rapid_host_community_impact_assessment_summary.pdf



Source: Department of Forestry, GoB.

Fig. 3. Deforestation rate in the camp area

biodiversity, and ecological balance of the area? And what the Bangladesh government needs to do regarding this matter?

Eight hundred hectares of protected forest land and more than 2500 total hectares are planned to accommodate the influx of Rohingya in Teknaf and Ukhiya. The habitat of wildlife is hampered. There are no proper sanitation facilities and water resources; they are dumping waste here and there, leading to an ecological disaster shortly. In Ukhiya and Teknaf, air pollution has increased from the firewood smoke burned by refugees. And a large number of trucks, jeeps, and cars bringing people and products into the camps also caused air degradation.

All of the problems stated above can create an anomaly in Bangladesh among the citizens, which can also be a cause of global warming. As a result, the sea level will rise, and our existence must be under threat for secondarily having such a crisis. There could create a huge ecological disaster; wildlife could face a great disaster and landslides can frequently be happening, and also can destroy biodiversity in the future.

There is a need for common understanding for avoiding ecological disasters. The government needs to take immediate actions to protect the environment and bring alternative ideas for Rohingyas to live and not to establish Rohingya camps in the major area. There is needed for

proper education among Rohingyas for awareness; and the government, NGO workers, should take responsibility. A coordinated effort from the government and other sectors can avoid environmental disasters. The international community and UN should give more focus regarding the Rohingya crisis. A proper plan is in need for overcoming this great problem.

Bangladesh government has taken a lot of measures now to protect the environment like sending Rohingya people off to the Vasanchar to minimize the pressure of people from Cox's bazar area. But there is a lot more to do. The successful repatriation process should be done as soon as possible to maintain the healthier environment for the local people.

6. CONCLUSION OF THE STUDY

6.1 Conclusion

Rohingya people are coming to Bangladesh since 1978. Then rapid influx has happened in 2017 that brought the environmental threat for Bangladesh, especially in the local area. The biodiversity and ecosystem are in danger because of overpopulation in a small area, posing a threat for environmental degradation. Bangladesh should go back strongly in the diplomatic negotiation with Myanmar as this is much needed for Bangladesh for the national interest. Because it said that, Rohingya people's

loss is repairable, but the loss of Bangladesh is irreparable (Parnini, 2013). Bangladesh needs strong support from the international community to protect the environment of Bangladesh as the country tops all the country for environmental disasters. With this huge refugee influx, the threat for Bangladesh has become more with other measures. There is a need for more policy formulation, negotiation for the Rohingya perspective. Early repatriation of Rohingya is necessary for protecting the Bangladesh environment as no one knows what is stored for Bangladesh soon.

So, early measures are needed for bringing back the ecological balance in the local area. And Bangladesh needs more strong actors who can show up the problem globally and nationally and play a strong role in the negotiation table to get more aid and assistance from the international community to deal with the Rohingya issue. And environmental problem needs to be more focused on as this is considered one of the most dangerous threats for Bangladesh. Problem identification is more important to solve the problems and go for solutions.

Bangladesh provided them shelters for their safety which they did not get in their country of origin from the humanitarian context. But nothing could be greater than the country's own interests. This Refugee influx in Bangladesh is a threat to the country. Having a humanitarian sense of responsibility is necessary, and with this, the thinking of the betterment of the nation is important as well. It should not forget that Bangladesh is one of the poorest countries in the world, with a huge population. Adding more population will raise more and more problems, no matter how many measures to take to solve the issue. The problems will be getting bigger than smaller. So, no option is left for the government to be more concerned as the problem is not lessening; it is getting much higher in the future if they don't come with ultimate sustainable solutions as early as possible.

6.2 Recommendations

Recommendations for this study include –

1. In a recent UN meeting, the Prime Minister of Bangladesh placed proposals for returning the Rohingyas as Bangladesh is facing challenges. She mentioned the diversion in Bangladesh because of the

Rohingya influx in Bangladesh. So, it has become necessary to take them back.

2. This study recommends that the environmental problem of that area cannot get solved in the presence of a huge number of Rohingya people. Their safe return to their home is necessary for them and also for Bangladesh. Voluntary repatriation is much needed.
3. Moving all the Rohingyas to Vasanchor can reduce the pressure from Cox's bazaar environment. The process has already started, but Bangladesh Government is facing difficulties from the international arena to move them to a secluded place.
4. This study gives the total overview of environmental degradation in Cox's bazaar area and the catastrophe that can occur in the future for the Rohingya refugee crisis. That can help the other researchers in doing further research.
5. Bangladesh needs more strong diplomatic actions to repatriate Rohingya to Myanmar and continue negotiation with Myanmar until they reach ultimate solutions to repatriate the Rohingya.
6. Bangladesh government should strongly continue its effort to engage the world to Rohingya issue to solve the problem. Because of pressurization from the whole world, on Myanmar government could solve the issue, and then the environment can save as well.
7. NGOs and the civil society of Bangladesh need to play a stronger role in the country and the world instead of maximizing their profits and doing business on the Rohingya issue.
8. Security service and the regulation of local areas should be increased more so that Rohingya people cannot harm the environment. That should be considered a punishable crime for the conservation of the environment.
9. More engagement of local people and educating them more about environmental threats for conserving the environment.
10. More policy formulations and implementations need from the Bangladesh side on the Rohingya issue.

6.3 Practical implication and limitation

Host people were continuously expressing their grief for the local environment, how the atmosphere has been damaged after their arrival. The local area crimes have also enlarged,

and unruly Rohingyas are destroying local people's wealth. Water scarcity has been seen in the camp area, and the water level has gone down than before. The hills cut down in the camp area, and in the monsoon period, the hills get riskiest for the local people. The wild animals have lost their homes for uprooting the reserve forest. While conducting the research, the limitations that have faced the research are—challenges to visit the Rohingya camp, getting funds, rapport building with local people and refugees, getting access of experts in taking interviews, being conscious of asking questions while interviewing, being aware of creating any kind of violation against respondents, less availability of literature, same confusing data on several kinds of literature, less time for collecting observational data, and the limited time frame for completing the whole process.

6.4 Social Implication

This study will help to know the possible environmental crisis Bangladesh faces and could face shortly. It will help in further research in this related field. This study can have a larger impact on society to spread the consciousness for conserving the environment. It can help the government be more concerned about saving biodiversity and motivate social organizations to act more prominently. This study can be the guideline for the actions which could be beneficial for conserving the local area from being destroyed.

CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the authors.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX A

Research Questions:

Central Question:

1. What are the impacts on the environment created in Bangladesh for the Rohingya refugee crisis?

Sub Questions:

1. What types of environmental problems have created the crisis?
2. What are the challenges local people are facing for Rohingya from an environmental perspective?
3. What scarcities can be faced by Bangladesh shortly because of the crisis?
4. How can government overcome the environmental problems by taking necessary steps?
5. What is the role of NGOs and civil society in protecting the environment?
6. What can be the sustainable solutions for the conservation of the environment?

APPENDIX B

Interview Protocol Project: The Rohingya Crisis in Bangladesh from the environmental perspective.

Place: Rohingya refugee camp, Balukhali, Ukhiya, Cox's bazaar and BRAC office, Cox's bazaar. Rohingya refugee crisis is one of the largest refugee crises in the world now. Stateless Rohingya people have come to Bangladesh from Myanmar to escape from the military persecution against them. This huge influx of Rohingya people to Bangladesh that brought environmental threats for Bangladesh. The local area of Cox's Bazaar and Teknaf is highly at risk. The government is providing shelters for them by cutting a large number of trees. That is creating deforestation, and there are also so many environmental risks that Bangladesh is facing and can soon face for this huge influx of Rohingya. That could bring a great natural catastrophe for Bangladesh.

So, for these high environmental risks in Bangladesh for Rohingya people, my research arena is from the environmental perspective that is highly in danger for the Rohingya refugee crisis.

Questionnaire as follows:

- 1) What made Rohingyas come to Bangladesh?
- 2) How have they created impacts on the Environment of Bangladesh?
- 3) What types of environmental challenges have been created for the crisis?
- 4) What are the challenges local people are facing for Rohingya from the environmental perspective?
- 5) How are the reactions of local people to environmental issues?
- 6) What scarcities can be faced by Bangladesh shortly because of the crisis?
- 7) How can government overcome the environmental problems by taking necessary steps?
- 8) How do environmental risks increase more in the monsoon period?
- 9) What are the roles of NGOs in Rohingya camps for protecting the environment?
- 10) How can they prevent those environmental challenges altogether?
- 11) How are international organizations responding to huge environmental threats for Rohingya influx in Bangladesh?
- 12) Are investments for the environment enough?

- 13) Have the Bangladesh Forestry Department taken any special measures to preserve the forest and other areas in Cox's Bazaar district?
- 14) What is the contribution of NGOs for maintaining and protecting a sustainable environment in the refugee crisis?
- 15) What is being done, or needs to be done, by the local authorities and the international community?
- 16) What sustainable solutions can take for the conservation of the environment and ecosystem?
- 17) How media is dealing with this environmental crisis?

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