

Review on Present Status of Rohingya People in Bangladesh: Effects on Social, Economic, Environment and Wildlife Habitat

ABSTRACT

The Rohingya peoples are an ethnic Muslim minority group who are the most ill-treated and persecuted refugee groups in the World. The country of Bangladesh has a long history of sheltering Rohingya refugees from Myanmar. More than 9,00,000 Rohingya have recently fled from Myanmar to Bangladesh and are now residing in refugee camps in Cox's Bazar District. In the majority of cases, the forest and hills have been replaced by the Rohingya to create the accommodations in this area. Forestland is therefore being destroyed to make camps for this enormous inflow of refugees, posing a serious threat to ecosystems, biodiversity, and wildlife habitats in this area. The current study looks at the socioeconomic impact of migrating Rohingya refugees to Bangladesh, with a focus on the environmental crisis. We reviewed recently published papers about Rohingya refugees in Bangladesh. There is broad agreement that the high speed of refugee settlements and their engagement with antisocial activities with other malpractices are major drivers for making the huge socio-economic crisis and environmental threat in that area. The current study concluded that the decades-long presence of refugees in Bangladesh has created a natural disaster for wildlife habitats in these areas. There is only one way that Bangladesh's government must implement various strategies for liaising with the international community to compel Myanmar's government to begin repatriating the Rohingya to their own country.

Keywords: Bangladesh, environment, habitat, refugee, Rohingya, socio-economic.

1. INTRODUCTION

The world is currently experiencing its worst refugee crisis in history. The Rohingya, one of the most stateless and persecuted ethnic groups in the world, are being driven into Bangladesh from Myanmar (Fig. 1), a country dominated by Buddhism [1]. Arakan is Myanmar's northwestern province, home to two major ethnic groups: The Rohingyas and the Rakhines (Fig. 2). The Rohingya are from North Arakan, while Rakhine is from South Arakan. The Rohingya are the largest ethnic and religious group in Myanmar's northwestern Rakhine state. Its culture and religion differ significantly from that of other ethnic groups in Myanmar [2, 3]. According to religion, the Rohingyas are Muslims, while the Rakhines are Buddhists [4]. The Rohingya refugee crisis is not a new or unexpected issue for Bangladesh. Bangladesh has a long history of hosting Myanmar's Rohingya refugees. Following the introduction of the Emergency Immigration Act by Myanmar's military regime in 1978, the minority Muslim Rohingyas began to flock to Bangladesh [5].



Comment [WU1]: in the abstract, you should briefly include related: 1) research objectives, 2) sources of information, and 3) the method you use in analyzing information sources so that this paper produces themes that answer the purpose of writing this article, and 4) the results of this study.

Comment [WU2]: in the introduction, you should indicate why the study is important which will lead to the paper objectives.

Fig. 1. The present scenario of the camp area of Rohingya refugees in Cox's Bazar district (Photo courtesy: Omar Munna (left); Getty Images (right))

However, the most recent wave of Myanmar violence has resulted in the largest Rohingya influx to date, with an estimated 1 million refugees crossing from Rakhine state into Cox's Bazar, Bangladesh, since August 25, 2017 [1, 6]. What happened in Myanmar before August 2017? Arakan Rohingya Salvation Army (ARSA) activists stormed more than 30 police security checkpoints on August 25, 2017, which led to a violent response from the security forces. Medecins Sans Frontieres (MSF), a global medical humanitarian aid organization, estimates that the violence claimed the lives of at least 6,700 Rohingya people, including 730 children under the age of five [7]. The Rohingya experienced unimaginable mental torture in Myanmar. According to the key information, many children under the age of ten who were born with congenital disorders also had a mental handicap as a result of these terrible events. Due to the loss of everything in life, adults also experience mental agony. The psychological damage they have sustained as a result of seeing how the military expedition in their state died is incalculable.



Fig. 2. Major ethnic groups in Myanmar [8].

According to Amnesty International, Rohingya women and girls were raped and subjected to sexual abuse by Myanmar security personnel. In late August 2017, at least 288 villages in the northern section of Arakan were partially or entirely destroyed by fire [9]. The United Nations believed that the Myanmar regime intended to expel Rohingya Muslims from Rakhine [10]. The majority of the Rohingyas are now housed in various camps in Cox's Bazar, Bangladesh, after the forested hills that surrounded the two existing refugee camps in Teknaf, Kutupalong, and Nayapara were replaced. Few of them have made their homes in more isolated and distant locations with scant access to infrastructure and services [11, 12]. The current review concentrates on the present status of Rohingya people in Bangladesh, and its impact on the surrounding area, placing particular emphasis on the environment and wildlife habitat, deforestation and deterioration of protected areas, human-wildlife conflicts, and other issues.

2. ROHINGYA REFUGEE CAMP AREA

The Rohingya refugee people's camp area is located in Cox's Bazar District, the eastern and southern most of Chittagong Division (Fig. 3). The area is made up of 2,491.85 km² of primarily low-lying coastal land with extensive stretches of mixed agricultural areas and rough forested hills further inland [13]. An estimated 2.7 million Bangladeshi people are currently living in Cox's Bazar. The region is extensive, reaching 135 kilometers north to south and 30 kilometers east to west from the high northern part to the bottom southern part when it narrows to less than 3 km². Cox's Bazar is located in the tropical monsoon zone, which brings very high temperatures, copious rainfall (an average of 4,285mm yearly), and distinct wet and dry seasons [14]. The peoples depend on natural resources and ecosystem services for their livelihood provided by local agriculture, forestry resource, marine and cultivated fisheries, and ecotourism services [15]. However, every year so many natural calamities such as floods, tropical cyclones, tornadoes, and tidal bores have been attacked in this area. This region's geography is primarily recognized for its extensive forested sections, protected areas, natural reserves, and national parks are included [16]. The previous study also reported that the district has a forest cover of more than 25%, of which 11,615 ha are declared wildlife sanctuaries like the Teknaf Wildlife Sanctuary and an estimated 10,849 ha are protected forests [17]. There are different types of plant and animal species including birds, monkeys, snakes, and bats, are found in the forest habitat. The study reported that the Asian wild elephant is one of the threatened and gravely endangered species in this area [15, 16].

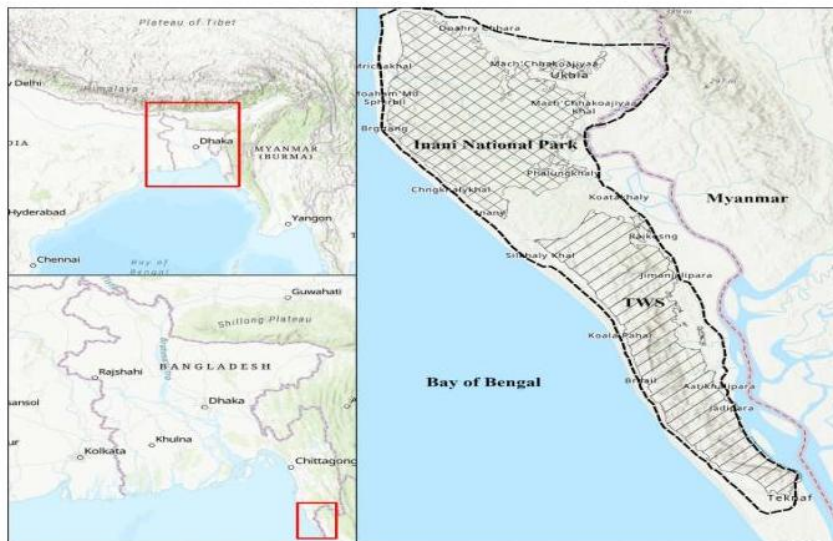


Fig. 3. Map of the Cox's Bazar District of Bangladesh [18].

3. NUMBER OF ROHINGYA POPULATION EXIST IN BANGLADESH

Around 307,500 Rohingya refugees lived in Cox's Bazar region before August 2017 [19]. After August 25, 2017, approximately 940,000 Rohingya migrated to Bangladesh [20]. The study region is home to more than 900,000 Rohingya refugees who live in a variety of host communities that have been in place for a while as well as unplanned camps that have sprung up since August 2017 [21]. With a total population of 771,000, three main sites and

their expansion regions house the majority of Rohingya refugees, making up almost 88% of those who have settled in the area although there are about 100 spontaneous refugee camps spread throughout the research area [21, 22]. With a total population of 713,000 Rohingya, the Kutupalong-Balukhali camp extension site, the largest refugee settlement in the area has the highest refugee concentration among all three locations (i.e., a population density of 533 refugees per hectare) [16]. The oldest recognized camp and second-largest refugee population are Nayapar. is the second-largest location for refugee settlement in the study region, which stretches from Leda in the north to Jadimura in the south and is home to some 37,000 refugees [23]. The Unchiprang location, which is the third largest camp between Nayapara and Kutupalong, houses about 22,000 Rohingya refugees. Between August and December 2017, an estimated 726,221 Rohingya refugees arrived in Cox's Bazar [24]. According to UNHCR estimates, this led to an increase in the overall number of Rohingya. Approximately a million people (884,041 registered refugees living in the District of Cox's Bazar, Bangladesh), of which 96% came since 2016 [25]. The Administration of Bangladesh constructed numerous new camps in the Cox's Bazar region with the assistance of UNHCR to Provide accommodations for the recent Rohingya refugees. The area now houses the biggest number of refugees in every country in the world. The site of the Kutupalong-Balukhali camp's expansion has a total population of 635,000 people [26]. Most of the refugees have set up camps in steep terrain which were covered in forest, at risk of landslides, and exposed to cyclones and extreme precipitation occurrences during the cool-rainy monsoon season might cause flash flooding [16, 27, 28].

4. NUMBER OF ROHINGYA POPULATION EXIST IN SURROUNDING COUNTRIES

A smaller number of Rohingya refugees have settled down around Myanmar such as in Indonesia, Nepal, India, Thailand, Malaysia, and other nations in the region. In addition, some Rohingya refugees migrated to other nearby nations like Thailand (92,000) and India (21,000) [29]. The number of internally displaced people (IDP) in Myanmar has risen to more than 1.1 million as a result of ongoing armed hostilities, with 769,000 of them have fled their homes since February 2021 [30].

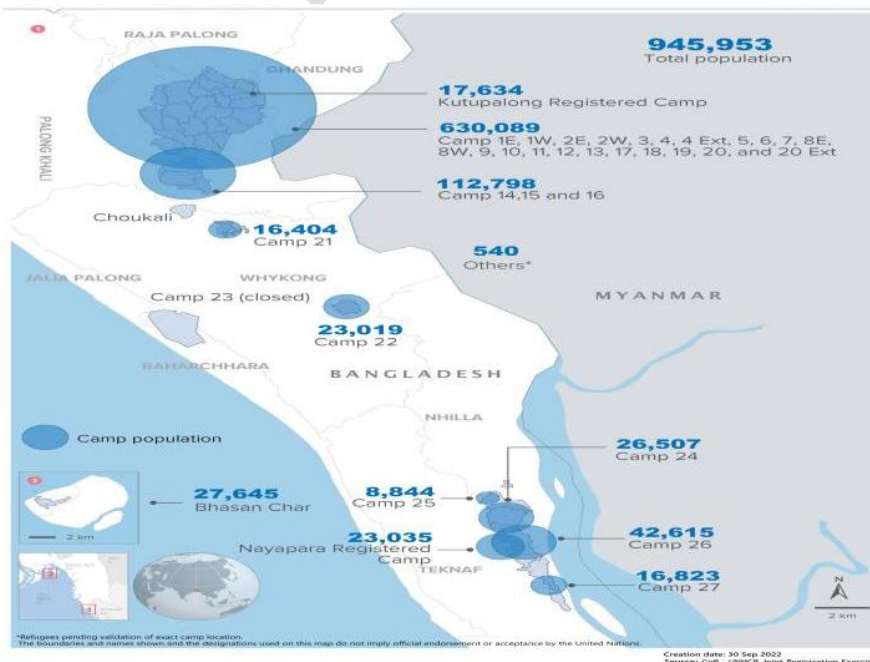


Fig. 4. Rohingya population dynamics in Cox's Bazar, Bangladesh [31].

5. GEO-CLIMATIC CONDITION OF THE COX'S BAZAR

The study region experiences a subtropical environment with varying seasonal fluctuations and moderately high temperatures (an average of 78.98°F) each year. Occurrences with significant precipitation (annual rainfall estimated at 4,000 mm). The region experiences hot, humid summers and a pre-monsoon season from March to May. A cool-rainy monsoon season (from June to September), a cool-dry winter, and a post-monsoon season (from October to May) the wet season (December to February), and the dry season [16, 32].

6. CRISIS IN GDP AND BUDGETING OF THE BANGLADESHI GOVERNMENT

The nominal gross domestic product of Bangladesh in 2021 was 416.26 billion USD in current USD [33]. According to the Bangladesh Ministry of Finance, the Government revenue in 2021-22 was 38.90 billion USD in the present day's currency and present exchange rate [34]. Conservative estimates place the required aid to provide for the Rohingya refugees at 1 billion USD a year, which amounts to about 3.5 % of the Government's revenue in 2017 [35]. This represents a significant amount to finance and a huge potential burden for a country that is already one of the poorest. After the crisis evolved, the Finance Minister declared the allocation of money to tackle the crisis, however, the exact amount of spending from the Government of Bangladesh was not found. The host nation may experience social and economic stresses as a result of rapid, unplanned refugee surges that devastate already precarious ecological balances [36]. Refugee inflows could upset established racial, religious, social, and community-based, as well as service-delivery, balances in settlement areas, which could lead to conflicts. Due to an increase in robberies, assassinations, prostitution, and drug trafficking, the presence of refugees typically poses security issues for the local population's social life [37].

7. SOCIO-ECONOMIC IMPACT IN BANGLADESH

The impact of the Rohingya refugees' presence on Bangladesh's economy cannot be long-lasting. The regional economy of the country is being severely and negatively impacted by the over one million refugees. Locals in Ukhiya and Teknaf, two districts in Bangladesh, are suffering greatly as a result of a rapid price increase in both the consumer market and the transportation sector. Currently, Bangladesh needs an additional \$600 million to pay for the upkeep and daily expenses of the almost 600,000 new Rohingya refugees who are residing in its country. In response, the UN had pledged to fund the humanitarian program with only \$230 million, or roughly 38.3% of the actual demand. The influx of Rohingyas also continues as a result of the continuing "Rohingya cleansing" campaign, which has targeted new Rohingya villages in central and northern Rakhine. As of yet, 302 Rohingya villages have been destroyed by fire, and it is anticipated that close to ten thousand Rohingya men, women, children, and senior citizens have been massacred [38]. Following their arrival on August 25, 2017, the newly arrived Rohingyas have already cleared roughly 4000 acres of forest land, burning close to 500 tons of wood per day for cooking [39]. This is how Bangladesh's scarce forest resources are being used, putting the region's natural balance in jeopardy. Since the 2017 exodus, in particular, the social cohesion between the host population and the Rohingya minority in Cox's Bazar has already started to disintegrate [40]. The region's host population as well as the Rohingya group there may modify their beliefs and behaviors unintentionally when social cohesion deteriorates. As competition for resources becomes more and more fierce, trust between the two communities is

deteriorating, which might increase conflict. Strict general security measures will result from the security precautions taken to avert any catastrophic events in the area, which will only fuel animosity between the two populations in Cox's Bazar. Fajth et al. 2019 investigated how refugee populations in a host state affect social cohesiveness, and their findings point to a worrying conclusion [41]. The results are in line with earlier studies that found that being exposed to violence and adversity was linked to greater support for both legal and criminal political activism [41]. A lack of progress in repatriation can erode community stability as displaced populations become more involved in violent activism, especially when these activities are linked to painful past experiences that continue to affect the refugee populations' current circumstances. If the host community believes that the Rohingya population is becoming increasingly detrimental to its well-being, it may decide to take collective action to socially exclude the Rohingyas from all employment opportunities. This could lead to a countermeasure in which the Bangladeshi Rohingya community as a whole supports the alienated Rohingya community as they are forced to rely on illegal means of earning a living. While the Rohingyas may be able to use this to prevent potential collective exploitation by the host population, such a circumstance would simply heighten unrest in the host nation. As the region's security deteriorates as a result of organized crime, the illegal drug trade, and the arms trade, the safety and security of the host community will be in greater danger. The safety and security of the Rohingya refugee population may suffer as the host community's security takes on more significance. Although the lack of legal refugee status for the Rohingya people may speed the use of harsher security measures against them, doing so could be harmful to the host community. The Director of the Bangladesh Institute of International and Strategic Studies (BIISS), Major General Md Emdad Ul Bari, NDC, PSC, TE, has referred to this security risk by stating that "Different reports said that the Rohingya have shown a tendency to flare up conflicts and threaten both social and national security at both transit and destination countries" [42]. If the host community believes that government efforts to increase security in the area are insufficient, then collective measures taken by the host community outside of government involvement to increase security (such as active exclusion from income opportunities through the local government and law enforcement) can cause civil unrest and a rift between the host and the Rohingya community in the area.

8. EFFECT IN TOURISM

The local economy and tourism are seriously threatened by the sudden growth in population (almost a threefold increase). As can be seen from local news and reporting, public opinion towards the Rohingya refugees may thus harm social cohesion and cause rifts between the refugees and the locals. In the future, this can lead to confrontations between the two groups. Some Rohingya teenagers have already engaged in illegal and antisocial actions like theft, assault, and even inflicting harm on law enforcement officials [43]. These antisocial behaviors and attitudes may have developed in youth as a result of poverty, an uncertain future, and the trauma they have experienced since infancy. These antisocial behaviors and attitudes may have developed in young people as a result of their upbringing in poverty, lack of a secure future, and trauma. It is urgently necessary to conduct a thorough investigation of the social integration and prospects of the Rohingya refugees, who are currently living in uncertainty. Determining the total effect of the ongoing migration crisis on all facets of the domestic economy may be made easier with the use of such a study and its findings. This is crucial for assessing the crisis's effects and the necessity of coming up with a workable, long-term solution.

9. CLASH WITH LOCAL LABORS

According to the research, the sudden influx of primarily low-skilled workers with the ability to

replace the existing workforce would have a detrimental impact on local labor market wages. The primary considerations for the substitution are the refugees' educational background and linguistic proficiency. The Rohingya and Bangladeshi both practice the same religion. Rohingya refugees can understand and speak the Chittagong dialect despite their language not being Bengali but being quite similar to the Chittagonian dialect [44]. Regarding their schooling, they mostly refer to labor market competition for unskilled workers. Regarding their schooling, they mostly refer to labor market competition for unskilled workers. Since Ukhia and Teknaf are two of Bangladesh's poorest regions, where half of the population works in menial labor, the residents there confront intense competition [45]. In actuality, this is in line with the critical migration theory, which contends that migration is a means of relocating inexpensive labor. In this way, the Rohingya forced exodus led to an overabundance of cheap labor. Even though they are not permitted to work or leave the camps, Rohingya migrants can conceal their identity due to their similar language. In exchange for their inexpensive labor force, the neighborhood employers also assist them in hiding their identities. To make some money for themselves, the Rohingya immigrants primarily work on construction projects or in the fishing industry [45, 46].

10. TERRORISM AND DRUG TRAFFICKING

The Rohingya community in Bangladesh, where they currently reside, is accused of occasionally breaching and weakening the broader law and order situation. The Rohingya inflow is linked to terrorism as well as many forms of trafficking, including human trafficking, ammunition trafficking, theft, drug trafficking, armed robbery, and maritime piracy. Mr. Mohibullah, one of the Rohingya leaders in Bangladesh was killed in 2021 by an unknown terrorist in the camp area of Cox's Bazar [47]. So many unwanted incidents have taken place in this area every day. Smuggling and unauthorized cross-border intrusions are a couple of other notable arrests. Additionally, there is a growing correlation between Rohingyas and the rising incidence of crimes involving sexual assault (including prostitution and sexual slavery), extortion, killings for organs, domestic servitude, and forced labor [48]. They frequently have surprisingly violent spillover effects on the local Cox's Bazar district population as a result. The rising degrees of fear and defeat sensitivity among the local people and Rohingyas seriously impede productive debate. Furthermore, it is thought that the Rohingya community is a factor in the local communities' loss of law and order. Rohingyas have been involved in several societal problems, including the trafficking of illegal firearms and drugs in Bandarban [49]. Even though it has ceased agreeing to allow new Rohingya immigration, Bangladesh does not just deport the people back to Myanmar because of the threats they face there.

11. PROSTITUTION

Unfortunately, the Rohingya women can easily leave the camp after sunset. As a result, interested parties have used them as prostitutes. According to our findings, a sizable proportion of Rohingya women engage in prostitution. Another direct crime they committed was drug dealing. The Rohingya camp is a hub for drug trafficking. The sanitation process in the Rohingya camp is adequate but unsanitary due to the difficulty in managing proper and clean sanitation systems for the massive influx of Rohingya [50].

12. EFFECTS ON ENVIRONMENT AND WILDLIFE

Natural forest cover has been declining globally by 3.1% a year since 1990, and Southeast Asia has seen an even more pronounced loss [51]. The loss, fragmentation, and thinning of the forest are caused by stressors brought on by anthropogenic activity, which has been a prominent area of study for climate change and biodiversity [52, 53]. Forest degradation is the stalled succession constrained by anthropogenic pressures that limit the natural

ecological processes and forest dynamics. The districts of Cox's Bazar and the neighboring areas in southeast Bangladesh are abundant in natural resources and wildlife. These areas have been covered in various kinds of vegetation for a very long time. Several studies reported that the Cox's Bazar-Teknaf Peninsula is an ecologically important region for wildlife habitat where three forests were declared as reserve forests [54-56]. Even though the government designated these forests as reserves and imposed limitations on them to protect them, the forest lost some of its area [57, 58]. The effect of any refugee crisis on the environment and natural resources of the host country has emerged as a problem in the modern world because temporary housing is frequently built close to ecologically sensitive areas, such as national parks, reserve forests, or agriculturally marginal areas [59, 60]. As a result, some environmental deterioration has occurred, including deforestation, dwindling firewood supplies, land degradation, unstable groundwater extraction, and water [61]. In various ways, forests and trees contribute to community resilience and reduce vulnerability to climate-related pressures [62].

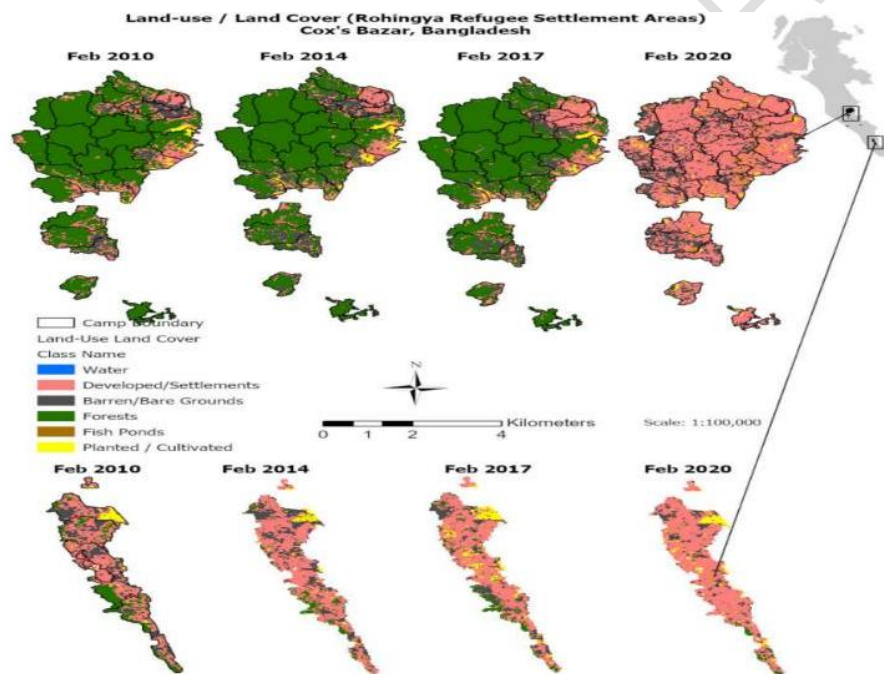


Fig. 5. Changes of the landscape configuration pre- and post-arrival periods of Rohingya Refugees in Cox's Bazar, Bangladesh [63].

A recent study identified the socioeconomic elements contributing to deforestation processes, such as poverty, refugee movement, forest encroachment, and power interactions involved in forest management on the Teknaf peninsula [64]. Another study highlighted the undocumented Rohingyas' livelihood strategies and the potential repercussions on the forest and other natural resources, including the Teknaf Wildlife Sanctuary [32]. The study reported that cutting down trees on slopes has a huge negative influence on the Teknaf Wildlife Sanctuary [32]. Refugees cut down trees to make shelters and collect wood for cooking and heating. As a result, the area surrounding the refugee

camps may lose its vegetation and trees [65]. The recent Rohingya influx in 2017 created major environmental effects and wildlife habitat losses in the hostile area of Cox's Bazar. The majority of the Rohingya refugees are encamped in hilly areas, which were previously forest areas, vulnerable to landslides, and highly exposed to cyclones and flash flooding due to extreme precipitation events during the cool-rainy monsoon season [3, 16, 28, 32]. The topsoil in the areas close to the camps has been severely exposed and has been completely cleared of vegetation as a result of the prolonged fuelwood harvesting activity. Additionally, the soil has been uncovered, and the remaining plants, notably tree roots, have been cut down [18, 64]. Rapid vegetation loss and anthropogenic weathering are removing and washing away the topsoil, which will eventually disturb the plant nutrition of the forest ecosystem [66]. This significant growth (1355 ha) of refugee settlement has mostly replaced the forested land as a result of the Rohingya influx in 2017, reducing the vegetative cover surrounding the camps by 2283 ha [67]. According to Imtiaz (2018), the vegetation cover in the Teknaf Upazila and Teknaf Wildlife Sanctuary decreased by 1284 ha and 103 ha, respectively, in late 2017 [65]. Teknaf Wildlife Sanctuary covers an area of 11,615 hectares and is home to 538 plant species and 613 animal species, including Asian elephants [68]. A recent study investigated the forest losses caused by Rohingya settlements near Teknaf Wildlife Sanctuary and Himchari National Park [63]. The study found losses of forest area from Teknaf Wildlife Sanctuary and Himchari National Park as a result of the Rohingya influx between 2017 and 2020. However, the results showed that the construction of the Rohingya camp resulted in a significant 11% point drop in forest cover in non-protected areas [63]. This drastic decline in dense vegetation cannot possibly be a result of rapid refugee inflow and settlement expansion; rather, it is a direct result of their catastrophic effects. Since many of these temporary relocation camps were built in or close to wild elephant corridors, which have already resulted in several incidents of conflict between Rohingya and elephants, the rapid degradation of forested land will cause ecological issues and disturb wildlife habitats in the area [16]. Recently, Hasan et al. (2021) used a multi-criteria evaluation to estimate the status of the forest vegetation and looked into and identified a very noteworthy observation in the Rohingya camp area [18]. According to the spatial severity of impact (SSI) index, out of the 5415 ha of total degraded forest areas, 650 ha would have the highest cost from 2017 to 2027 [18]. The environmental integrity (EI) index assessed the area's rapidly declining ecosystem integrity, which went from 1340 ha in 2018 to 1190 ha in 2019, and predicted that by 2027, the integrity will have decreased, even more, reaching 740 ha [18].

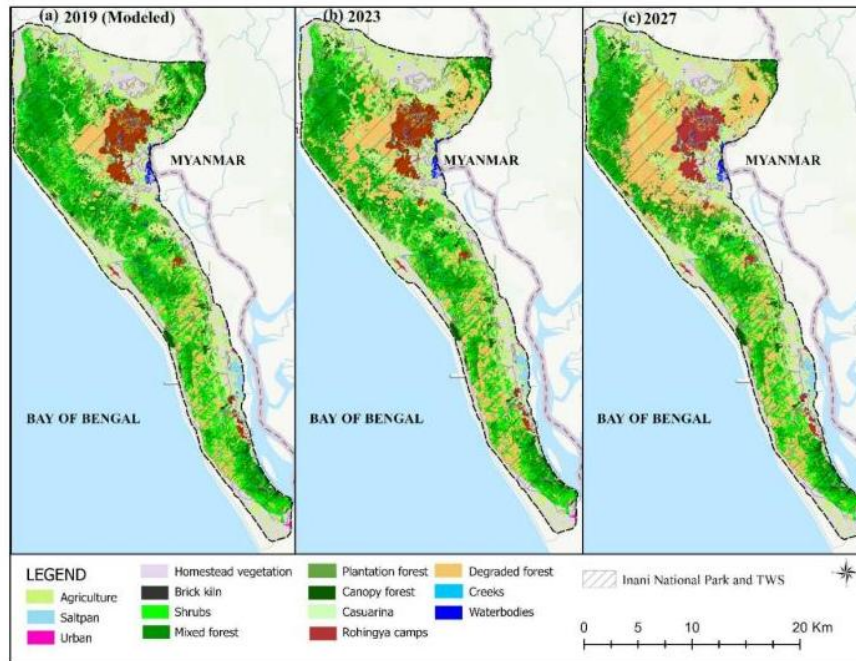


Fig. 6. Predicted land use and forest cover in the Rohingya hostile area. (a) is the experimentally modeled map derived from the land use and forest cover data for 2017 and 2018. (b) and (c) are the predicted land use and forest cover maps for 2023 and 2027, respectively, derived from land use and forest cover maps of 2017 and 2019 [18.]

13. CONCLUSION

The review emphasized identifying the social, economic, and environmental impacts of Rohingya refugees on the local community of Cox's Bazar in Bangladesh. The environment of the Cox's Bazar district is currently at grave risk due to the influx of a large number of Rohingya people. From a humanitarian standpoint, the Bengali population that surrounds the Rohingya has so far shown a great deal of tolerance and sympathy. On a local and regional level, there is also escalating socio-economic hostility between the locals and the Rohingya sometimes. Overall, the review identified that the Rohingya influx in 2017 was a new kind of shock for Bangladesh resulting in the tremendous impacts of socio-economic on the host nation being real and very alarming. The ever-increasing population has an impact on local resources, making security very fragile and destruction of the ecosystem. Some organizations are also compelled to clear the hills to construct offices and establish activities in the camp. As a result, the quantity of land that was covered in plants drastically decreased, and the dependent community particularly the animal diversity is now at risk of going extinct. Forest resources are intertwined with a variety of other challenges, including biodiversity conservation, climate change adaptation and mitigation, and coastal resilience. The Rohingya response strategy must include a sustainable forest and ecology management plan. To preserve vegetation, the review advised planting a large number of

plants for making the soil stable and stopping further forest degradation and destruction as a top priority. Also, it is important to emphasize the restoration and rehabilitation of degraded forest landscapes within the Rohingya camp area and urgently planting shade- and fruit-bearing trees along the hilltops, contours, valleys, and roadside. Meanwhile, the Rohingya situation will continue to be a tremendous burden for both the host community and the government. Despite the difficulties, the Bangladeshi government made great efforts to meet basic requirements with the help of UNHCR. The research findings reveal economic ramifications, such as new livelihood chances for Rohingya people through assistance agency employment; business opportunities provided by market advances; and revenues earned by development aid provision. Analyzing the scope of the local government of Bangladesh's and the international community's emergency response to the issue allowed researchers to gauge the magnitude of the negative effect of refugees on the Bangladeshi economy. Additionally, the country's international trade, local salaries and prices, and GDP change were all closely monitored. The Bangladeshi government must take more strong decisions about Rohingya repatriation while also ensuring that local security does not deteriorate further. International and national non-governmental organizations (NGOs) should also take on the challenge of ensuring their fundamental necessities. The only solution to all obstacles is the repatriation of Rohingya to Myanmar. Unfortunately, it is a major global issue that requires the engagement of the international community and will take years to resolve.

REFERENCES

1. Human Rights Watch. Rohingya Crisis. Accessed 17 November 2022. Available: <https://www.hrw.org/tag/rohingya-crisis>
2. Shams, S. 'Myanmar's Rohingya conflict 'more economic than religious', Interview with Siegfried O. Wolf, Deutsche Welle. 2018. Accessed 17 November 2022. Available: <https://www.dw.com/en/myanmars-rohingya-conflict-more-economic-than-religious/a-18496206>
3. Milton AH, Rahman M, Hussain S, Jindal C, Choudhury S, Akter S et al. Trapped in statelessness: Rohingya refugees in Bangladesh. *Int J Environ Res Pub Hea*. 2017;14(8):942. DOI: <https://doi.org/10.3390/ijerph14080942>
4. Kipgen N. Conflict in Rakhine State in Myanmar: Rohingya Muslims' Conundrum. *J Mus Minor Aff*. 2013;33(2):298-310. DOI: <https://doi.org/10.1080/13602004.2013.810117>
5. Sidhu JS, Parnini SN. International responses to human rights violations in Myanmar: the case of the Rohingya. *J Int Stud*. 2011, 7:119-134. DOI: <https://doi.org/10.32890/jis.7.2011.7920>
6. Cable News Network (CNN). The Rohingya Crisis. Accessed 17 November 2022. Available: <https://www.cnn.com/specials/asia/rohingya>
7. Medecins Sans Frontieres (MSF). Rohingya refugee crisis. 2017. Accessed 17 November 2022. Available: <https://www.msf.org/myanmarbangladesh-msf-surveys-estimate-least-6700-rohingya-were-killed-during-attacks-myanmar>
8. Asrar, S. Rohingya crisis explained in maps, 2017. Accessed 17 November 2022. Available: <https://www.aljazeera.com/news/2017/10/28/rohingya-crisis-explained-in-maps>
9. Amnesty International. Myanmar: Military top brass must face justice for crimes against humanity targeting Rohingya. 2018. Accessed 17 November 2022. Available: <https://www.amnesty.org/en/latest/news/2018/06/myanmar-military-top-brass-must-face-justice-for-crimes-against-humanity-targeting-rohingya/>
10. United Nations International Children's Emergency Fund (UNICEF). Humanitarian situation report (Rohingya Influx) No.33. 2018. Accessed 17 November 2022.

Available: <https://www.unicef.org/media/78296/file/Bangladesh-SitRep-Rohingya-influx-3-June-2018.pdf>

11. International Organization for Migration (IOM). IOM Bangladesh: Rohingya Refugee Crisis Response. Accessed 17 November 2022. Available: <https://bangladesh.iom.int/rohingya-humanitarian-crisis-response>
12. Zaman KT, Hasan WU, Bazlul L, Motahar T, Ahmed N. Exploring challenges and solution approaches regarding wellbeing of Female Rohingya Community in Bangladesh. InTENCON 2019-2019 IEEE Region 10 Conference (TENCON) 2019 Oct 17 (pp. 361-366). IEEE.
13. Lewis, D. The view from Cox's Bazar: assessing the impact of the Rohingya crisis on Bangladesh, The London School of Economics and Political Science, viewed 13 May 2018. Accessed 18 November 2022. Available: <http://blogs.lse.ac.uk/southasia/2018/04/11/the-view-from-coxs-bazar-assessing-the-impact-of-the-rohingya-crisis-on-bangladesh/>
14. Bangladesh Bureau of Statistics (BBS). Gross Domestic Product of Bangladesh at Current Prices: 2012-13 to 2015-16, BBS, Ministry of Planning, Dhaka, viewed 04 May 2018. Accessed 18 November 2022. Available: http://203.112.218.65:8008/WebTestApplication/userfiles/Image/GDP/GDP_2015-16_p.pdf
15. Tallis H, Huang C, Herbohn JL, Holl K, Mukul SA, Morshed KA. Steps Toward Forest Landscape Restoration in the Context of the Rohingya Influx: Creating Opportunities to Advance Environmental, Humanitarian, and Development Progress in Bangladesh. CGD Policy Paper 148, July 2019.
16. Hassan MM, Smith AC, Walker K, Rahman MK, Southworth J. Rohingya refugee crisis and forest cover change in Teknaf, Bangladesh. *Remote Sensing*. 2018;10(5):689. DOI: <https://doi.org/10.3390/rs10050689>
17. Hossen S, Hossain MK, Uddin MF. Land cover and land use change detection by using remote sensing and GIS in Himchari National Park (HNP), Cox's Bazar, Bangladesh. *J. Sci. Technol. Environ. Inform.* 2019;7(02):544-54. DOI: <https://doi.org/10.18801/jstei.070219.56>
18. Hasan ME, Zhang L, Mahmood R, Guo H, Li G. Modeling of Forest Ecosystem Degradation Due to Anthropogenic Stress: The Case of Rohingya Influx into the Cox's Bazar–Teknaf Peninsula of Bangladesh. *Environments*. 2021;8(11):121. DOI: <https://doi.org/10.3390/environments8110121>
19. Myat L. The Rohingya Refugee Crisis: Social, Economic and Environmental Implications for the Local Community in Bangladesh. 2018. Accessed 18 November 2022. Available: <https://flex.flinders.edu.au/file/20455f70-482e-480d-843e-288609037d12/1/Thesis%20Myat%202018.pdf>
20. UNHCR. Rohingya-Emergency. Accessed 18 November 2022. Available: <https://www.unhcr.org/rohingya-emergency.html>
21. United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA). Rohingya Refugee Crisis. Accessed 18 November 2022. Available: <https://www.unocha.org/rohingya-refugee-crisis>
22. ISCG Situation Report: Rohingya Refugee Crisis, Cox's Bazar. Accessed 18 November 2022. Available: <https://reliefweb.int/report/bangladesh/iscg-situation-report-rohingya-refugee-crisis-cox-s-bazar-1-november-2018-covering>
23. Rohingya Refugee Sites. Accessed 18 November 2022. Available: <https://reliefweb.int/map/bangladesh/rohingya-refugee-sites-paras-and-majhee-blocks-camp-27-jadimura-teknaf-coxs-bazar-1>
24. Refugee Response in Bangladesh. Accessed 18 November 2022. Available: https://data.unhcr.org/en/situations/myanmar_refugees
25. DCA Fact Sheet Bangladesh. Accessed 18 November 2022. Available: <https://www.noedhjaelp.dk/wp-content/uploads/sites/2/2022/02/dca-factsheet->

- bangladesh-jan2022.pdf
26. OCHA. Rohingya Refugee Crisis. Accessed 18 November 2022. Available: <https://www.unocha.org/rohingya-refugee-crisis>
 27. Deadly floods and landslides hit Rohingya camps in Bangladesh. Accessed 18 November 2022. Available: <https://www.unhcr.org/news/press/2021/7/61015b864/deadly-floods-landslides-hit-rohingya-camps-bangladesh.html>
 28. Labib SM, Hossain N, Patwary SH. Environmental cost of refugee crisis: case study of Kutupalong Balukhali Rohingya Camp Site a remote sensing approach. Proceedings of the 26th Annual GIScience Research UK (GISRUK 2018), Leicester, UK. 2018 Apr:7-20.
 29. UNICEF. Rohingya Crisis. Accessed 18 November 2022. Available: <https://www.unicef.org/emergencies/rohingya-crisis>
 30. UNHCR steps up aid for displaced in Myanmar as conflict intensifies. Accessed 18 November 2022. Available: <https://www.unhcr.org/news/briefing/2022/2/6206288c4/unhcr-steps-aid-displaced-myanmar-conflict-intensifies.html>
 31. Rohingya Refugee Response/Bangladesh: Joint Government of Bangladesh - UNHCR Population factsheet. Accessed 18 November 2022. Available: <https://reliefweb.int/report/bangladesh/rohingya-refugee-responsebangladesh-joint-government-bangladesh-unhcr-population-factsheet-31-oct-2022>
 32. Rahman MZ. Livelihoods of Rohingyas and their impacts on deforestation. In: Deforestation in the Teknaf Peninsula of Bangladesh 2018 (pp. 113-125). Springer, Singapore. DOI: https://doi.org/10.1007/978-981-10-5475-4_9
 33. GDP (current US\$) – Bangladesh. Accessed 18 November 2022. Available: <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2021&locations=BD&start=2021>
 34. Statement I: Broad Details of Revenue Receipts. Accessed 18 November 2022. Available: https://mof.gov.bd/sites/default/files/files/mof.portal.gov.bd/budget_mof/c5933641_4d17_484e_862f_1110a964be33/ST_01_E.pdf
 35. Economist estimates Bangladesh needs \$1bn a year for Rohingya refugees to avert ADP setback. Accessed 18 November 2022. Available: <https://bdnews24.com/economy/economist-estimates-bangladesh-needs-1bn-a-year-for-rohingya-refugees-to-avert-adp-setback>
 36. UNHCR. Climate change and disaster displacement. Accessed 18 November 2022. Available: <https://www.unhcr.org/climate-change-and-disasters.html>
 37. Biswas P, Dey LC. Socio-economic and Environmental Impact of the Refugees Entrance to the Host Community on the Context of Relevant Aspects of SDGs: A Study from the Influx of Rohingya Refugee from Neighboring Myanmar to Bangladesh. 2021;26(6):1-12
 38. Amnesty International. The Social Atrocity: Meta and the right to remedy for the Rohingya. Accessed 19 November 2022. Available: https://www.amnesty.ch/fr/pays/asie-pacifique/myanmar/docs/2022/systemes-meta-facebook-ont-promu-violence-contre-rohingyas/220929_myanmar_facebook_rapport.pdf
 39. Rohingya influx: 15-year-old forestation project destroyed in 57 days. Accessed 19 November 2022. Available: <https://archive.dhakatribune.com/bangladesh/2017/10/21/rohingya-influx-15-year-old-forestation-project-destroyed-57-days>
 40. OCHA. Bangladesh: Needs and priorities of Rohingya refugees and host communities in Cox's Bazar since 2017: What has changed? Accessed 19 November 2022. Available: <https://reliefweb.int/report/bangladesh/bangladesh>

needs-and-priorities-rohingya-refugees-and-host-communities-coxs-bazar-2017-what-has-changed

41. Fajth V, Bilgili Ö, Loschmann C, Siegel M. How do refugees affect social life in host communities? The case of Congolese refugees in Rwanda. *Comp Migration Stud.* 2019;7(1):1-21. DOI: <https://doi.org/10.1186/s40878-019-0139-1>
42. Islam MR, Wara U. Conflict potential of the Rohingya people in Bangladesh and beyond. *J ASEAN Stud.* 2022;10(1):107–127. DOI: <https://doi.org/10.21512/jas.v10i1.8215>
43. Nights are dangerous in Rohingya camps. *Dhaka Tribune.* 2021. Accessed 19 November 2022. Available: https://archive.dhakatribune.com/bangladesh/rohingya-crisis/2021/10/02/nights-are-dangerous-in-rohingya-camps?fbclid=IwAR0SZCe9pS_77KbfQOkhJs2uAFF0vL27CuSy0GNmRk2ERv0tXuY061o8blc
44. Chowdhury PU. Rohingya refugees losing originality of their dialect. *The Financial Express.* 2021. Accessed 19 November 2022. Available: <https://thefinancialexpress.com.bd/views/rohingya-refugees-losing-originality-of-their-dialect-1618322936>
45. Baldwin C, Marshall ARC. “Rohingya refugees test Bangladeshi welcome as prices rise and repatriation stalls”. *Reuters.* 2018. Accessed 19 November 2022. Available: <https://www.reuters.com/article/us-myanmar-rohingya-bangladesh-tensions/rohingya-refugees-test-bangladeshi-welcome-as-prices-rise-and-repatriation-stalls-idUSKCN1GC08Y>
46. Bhattacharya R. “In Bangladesh, Locals Living Near Rohingya Camps Hope for Quick Repatriation of Refugees”. *The Wire.* 2017. Accessed 19 November 2022. Available: <https://thewire.in/external-affairs/locals-living-around-rohingya-refugee-camps-in-bangladesh-hope-for-quick-repatriation>
47. Rohingya Leader Mohibullah Killed in Bangladesh. *Human Rights Watch.* 2021. Accessed 19 November 2022. Available: <https://www.hrw.org/news/2021/09/29/rohingya-leader-mohibullah-killed-bangladesh>
48. Rahman U. The Rohingya refugee: A security dilemma for Bangladesh. *J Immi Ref Stud.* 2010;8(2):233-9. DOI: <https://doi.org/10.1080/15562941003792135>
49. Beyond Bandarban. *Outlook.* 2022. Accessed 19 November 2022. Available: <https://www.outlookindia.com/website/story/beyond-bandarban/229266>
50. Chan EY, Chiu CP, Chan GK. Medical and health risks associated with communicable diseases of Rohingya refugees in Bangladesh 2017. *International J Infect Dis.* 2018;68:39-43. DOI: <https://doi.org/10.1016/j.ijid.2018.01.001>
51. Richards DR, Friess DA. Rates and drivers of mangrove deforestation in Southeast Asia, 2000–2012. *Proceed National Aca Sci.* 2016;113(2):344-9. DOI: <https://doi.org/10.1073/pnas.1510272113>
52. Lambin EF, Geist HJ, Lepers E. Dynamics of land-use and land-cover change in tropical regions. *Annual Review Environ Res.* 2003;28(1):205-41. DOI: <https://doi.org/10.1146/annurev.energy.28.050302.105459>
53. Foley JA, DeFries R, Asner GP, Barford C, Bonan G, Carpenter SR, Chapin FS, Coe MT, Daily GC, Gibbs HK, Helkowski JH. Global consequences of land use. *Science.* 2005;309(5734):570-4. DOI: <https://doi.org/10.1126/science.1111772>
54. DoE. Community Based Ecosystem Conservation and Adaptation in Ecologically Critical Areas of Bangladesh: Responding to Nature and Changing Climate; Department of Environment, Government of Bangladesh: Dhaka, Bangladesh, 2015. Accessed 19 November 2022. Available: <https://portals.iucn.org/library/sites/library/files/documents/2015-053.pdf>
55. Nishorgo. 2019. Accessed 19 November 2022. Available: <http://nishorgo.org/project/inani-rf/>
56. Islam KN, Rahman MM, Jashimuddin M, Islam K, Zhang Y. Impact of co-

- management on tree diversity and carbon sequestration in protected areas: Experiences from Bangladesh. *Tree For Peo.* 2020;2:100033. DOI: <https://doi.org/10.1016/j.tfp.2020.100033>
57. CEGIS. Geospatial Database; Center for Environment and Geographic Information System: Dhaka, Bangladesh, 2011.
 58. Arannayk Foundation. Biodiversity of Protected Areas of Bangladesh, 1st ed.; The Arannayk Foundation: Dhaka, Bangladesh, 2013.
 59. Shepherd, G. 1995. The Impact of Refugees on the Environment and Appropriate Responses. Accessed 19 November 2022. Available: <https://odihpn.org/magazine/the-impact-of-refugees-on-the-environment-and-appropriate-responses>
 60. Martin A. Environmental conflict between refugee and host communities. *J Peace Res.* 2005;42(3):329-46. DOI:<https://doi.org/10.1177/0022343305052015>
 61. Gomez MP, Christensen A, Araya YY, Harild N. The impacts of refugees on neighboring countries: a development challenge (English). World Development Report background papers; 2011. Washington, DC: World Bank.
 62. Fedele G, Locatelli B, Djoudi H. Mechanisms mediating the contribution of ecosystem services to human well-being and resilience. *Ecos Serve.* 2017;28:43-54. DOI: <https://doi.org/10.1016/j.ecoser.2017.09.011>
 63. Nfamara K Dampha, Colette Salemi, Stephen Polasky. Rohingya Refugee Camps and Forest Loss in Cox's Bazar, Bangladesh: An Inquiry Using Remote Sensing and Econometric Approaches. Policy Research Working Paper 9948, 2022. Accessed 19 November 2022. Available: <https://documents1.worldbank.org/curated/en/989741646064634353/pdf/Rohingya-Refugee-Camps-and-Forest-Loss-in-Cox-s-Bazar-Bangladesh-An-Inquiry-Using-Remote-Sensing-and-Econometric-Approaches.pdf>
 64. Moslehuddin AZ, Rahman M, Ullah SM, Moriyama M, Tani M. Physiography, forests, and people in Teknaf. Deforestation in the Teknaf Peninsula of Bangladesh. Springer, Singapore. 2018:11-40. DOI: https://doi.org/10.1007/978-981-10-5475-4_2
 65. Imtiaz S. Ecological impact of Rohingya refugees on forest resources: remote sensing analysis of vegetation cover change in Teknaf Peninsula in Bangladesh. *Ecocycles.* 2018;4(1):16-19. DOI: 10.19040/ecocycles.v4i1.89.
 66. Chen X, Li BL. Change in soil carbon and nutrient storage after human disturbance of a primary Korean pine forest in Northeast China. *Forest Ecol Manage.* 2003;186(1-3):197-206. DOI: [https://doi.org/10.1016/s0378-1127\(03\)00258-5](https://doi.org/10.1016/s0378-1127(03)00258-5)
 67. Rahman M, Islam MS, Chowdhury TA. Change of vegetation cover at Rohingya Refugee occupied areas in Cox's Bazar district of Bangladesh: Evidence from remotely sensed data. *J Environ Sci Nat Res.* 2018;11(1-2):9-16. DOI: <https://doi.org/10.3329/jesnr.v11i1-2.43360>
 68. Mannan A. Saving our forests, and all creatures who dwell in them. *Dhaka Tribune.* 2017. Accessed 19 November 2022. Available: <http://www.dhakatribune.com/opinion/op-ed/2017/02/03/saving-forests-creatures-dwell/>