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## Impacts of Rohingya Migration on Surrounding Environment of Ukhiya, Bangladesh

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### ABSTRACT

This study was conducted at Ukhiya Upazila of Cox's Bazar district to find out the socio-environmental impacts due to Rohingya refugee's invasion of the study area. Both the quantitative and qualitative tools were used to analyze data and information, in order to assess these impacts. According to the finding, 3918 acre natural and 1879 acre man-made forest coverage was damaged due to Rohingya refugees sheltering in the study area. This study finds out that 42% of the refugees living in the Kutupalong sheltering area are directly dependent on the forest for cooking wood of 1411 tons/day. Moreover, Rohingyas are significantly affecting other natural resources including soil, agricultural land, and surface and ground-water of the study area. In fact, they use 18.26 million liters of water per day and the ground-water level has been depleted by 25 meters during the time period of 25 August 2017 to February 2018. Furthermore, ~9000 hectares of farming land with local crops (Boro, Aman, Betel leaf) and fruits had been permanently damaged as impacts of Rohingya migration on the area studied. We measured the noise level surroundings of the Rohingya camps, which was 1.5 times higher than the DoE recommended value for the residential area. Various life-threatening diseases were also identified towards the refugees among them diphtheria was most alarming. Moreover, Rohingyas are also involved in various antisocial activities including smuggling, drug trafficking, robbery, snatch, theft, etc. Such societal degradation might trigger multiplicative impacts on the environment and overall socio-economic circumstances of the whole Teknaf area.

**Keywords:** Rohingya, Refugee, Environment, Betel leaf, Agricultural, Socio-economic, Ukhiya, and Myanmar.

### INTRODUCTION:

Impact of the refugee crisis on the environment and the natural resource of the host community has become an emerging issue in refugee research. In recent time, Rohingya displaced people have developed into the dynamic clients of the forest resource of Bangladesh, which have generated extra pressure on natural ecosystem and have created the scarcity of forest resources (Khan *et al.*, 2012). They are staying in Bangladesh for long periods of time, having a prolonged impact on the environment (Shepherd, 1995). The UNHCR Environmental Guidelines,

(1996) stated that the environmental impacts of a deluge of refugee searchers in host nation's incorporate: uncontrolled fuel wood collection, poaching, and abuse of constrained water supplies. These impacts have placed serious strains on the ecosystems as well as parks or reserves recognized by UNESCO as World Heritage Sites. In addition, the losses of productivity, the extinction of species of plants or animals, the destruction of unique ecosystems might be badly affected result of refugee activities (Imran, 2014).

Rohingya refugees are the most deprived ethnic group sheltered in southeastern part of Bangladesh (UNHCR, 2016). Their actual habitat is the Rakhain state in Myanmar. Myanmar government does not accept them as their core ethnic group and runs a vicious deprivation in various sectors. Consequently, they have been relocating towards nearby countries (WHO, 2017). Bangladesh is the most nearby country of Myanmar by way of adjacent international border. They are being pushed into Cox’s Bazar district of Bangladesh since 1992. At last in 25<sup>th</sup> August 2017 their army has run a brutal ethnic cleansing. More than 1 million Rohingya people therefore entered into the Cox’s Bazar region of Bangladesh (BBC News, 2018). At present, refugees constitute more than a third of the local population of southeastern Bangladesh (IOM, 2018). The total refugee population is assessed at 882,676 where children make up the greater part, adults and the elderly constitute 42% and 3%, respectively (WHO, 2017).

The requirements of the refugees are obviously excessive, but it is no longer adequate simply to address their necessities. Rising costs, dwindling wages of low-skilled workers, are unfavorably touching host populations. As a result, environmental degradation, excessive pressure on public services growing concerns between refugee and host

Bangladesh (UNHCR, 2018). The objectives of the study were as follows: to find out impact of Rohingya migration on local environment of Ukhiya and to assess their impact on social and health sector of the study area.

**MATERIALS AND METHODS:**

The study was conducted in two union Kutupalong (21.2126°N 92.1634°E) and Balukhali (21.19°N 92.16°E) of Ukhiya Upazilla of Cox’s Bazar districts where Rohingya refugees camps are situated (Fig 1). The camp area is divided into two prominent parts: old registered camp and new unregistered camp. The study was conducted on new unregistered camp during the period February to September 2018. The empirical data and findings were procured by questionnaire survey, field observation and from secondary sources including published and un-published literatures, books and newspaper. For the questionnaire survey 72 respondents of local people and 77 respondents of refugees were selected through random sampling. The sound level was measured with portable digital sound level meter (Model: ST8820). Microsoft Office Excel software was used to present and interpret the collected data. The results of the study were presented in tabular and graphical form.

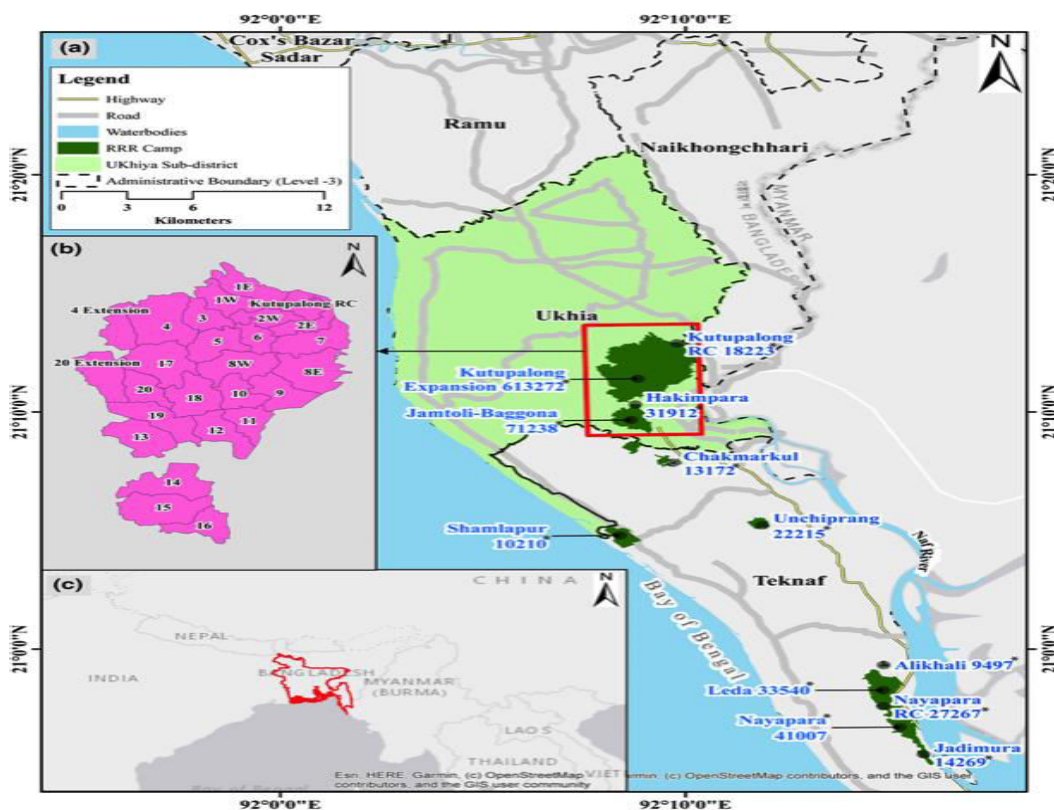


Fig 1: Map of the study area.

**RESULTS AND DISCUSSION:**

**Table 1:** Occupational status of both refugees and local people.

| Occupation           | Number of refugee | Number of local people |
|----------------------|-------------------|------------------------|
| Day laborer          | 4                 | 6                      |
| Agricultural worker  | 0                 | 21                     |
| Govt. service holder | 0                 | 3                      |
| Businessman          | 8                 | 26                     |
| Student              | 3                 | 10                     |
| NGO worker           | 2                 | 7                      |
| Doctor               | 0                 | 1                      |
| Unemployed           | 54                | 0                      |
| Teaching             | 1                 | 3                      |
| <b>Total</b>         | <b>77</b>         | <b>72</b>              |

(Source: Field survey)

According to Rohingya Refugee Rehabilitation Commission (RRRC), due to violence in Rakhine State which began on 25 August 2017 approximately 6,89,020 Rohingya people have driven across the border into Cox’s Bazar, Bangladesh. A total of 36,373 (Male: 17,395 Female: 18,978) were orphan children, approximately 30,000 were pregnant woman and 1,796 were infant (RRRC). According to UNHCR, the counted Rohingya refugees were 848,720 and the registered refugees were 33,956. The total refugees were 882,676 where the total families were 203,137. From survey it was found that, among the Rohingya refugees 53% were male and 47% were female and 53% of total refugees

were illiterate. This information reveals the ethnic partiality of Myanmar government with Rohingya people in education sector. In contrast, despite being a remote border area educational background of local people of Ukhiya is quite rich. Based on the survey no illiterate person has been found as respondent. Considering the professional background, only 2 out of 77 refugee respondents were involved with aid agencies and gets handsome salary for living. Others were not involved with any profession (Table 1).

Almost 70% of the refugees are totally dependent upon relief from United Nations, Bangladesh Government and various non-government agencies. Rohingya refugees are provided various types of life leading supports including land for dwelling, water and sanitation, food and cloths (Table 2). RRRC is managing these types of humanitarian activities (Aam *et al.*, 2021). They are aggregating all the helping hands. A number of international donor agencies and NGOs, including government and non-governmental organizations, are providing humanitarian assistance to the refugees (Table 3). Various environmental issues like deforestation, water pollution, soil degradation due to hill cutting, waste production etc. related to the Rohingya refugee sheltering in the study area were documented. Among all the environmental problems, most serious problem created by the Rohingya is deforestation (Fig 2).

**Table 2:** Humanitarian activities to the Rohingya refugees.

| Sector                                      | Ascertained number       | Progression (%)  |
|---|--------------------------|--|
| Allocated land for new camp                 | 3,500 acre               | 100%   |
| Installation of academic block in new camp  | 20 Nos                   | 100%   |
| Shelter                                     | 700,000 Nos              | 90%  |
| Food  | 700,000 Metric ton       | 95%  |
| Installation of Tube well in new camp       | 8,000 Nos                |  |
| Installation of Latrine in new camp         | 35,500 Nos               | 100%   |
| Management of electricity in new camp       | Set up of 17 km new line | 55%  |
| Construction of road connection in new camp | 33 km                    | 45%  |
| Health service                              | --                       | a. Provide MR vaccine to 129,750 refugees<br>b. Provide OPV to 69,539 refugees<br>c. Provide vitamin A capsule to 1,27,816 refugees<br>d. Provide several treatment to 17,77,018 refugees<br>e. Provide cholera vaccine in the first turn to 700,487 refugees and in the second turn to 282,658 refugees<br>f. Provide diphtheria vaccine to 1,69,127 refugees |

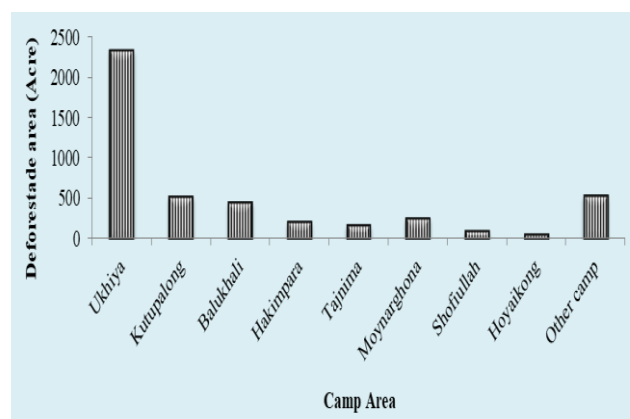
Source: Rohingya Refugee Rehabilitation Commission (RRRC)

**Table 3:** List of NGOs leading humanitarian activities to the Rohingya refugees (Source: RRRC).

| SN | Name of NGO   | National | International | Description of activity |         |                      |        |        |
|----|---|----------|---------------|-------------------------|---------|----------------------|--------|--------|
|    |   |          |               | Food                    | Shelter | Water/<br>Sanitation | Health | Relief |
| 01 | PULSE Bangladesh  | √        |               | √                       |         | √                    |        | √      |
| 02 | Reaching People in Need   | √        |               | √                       |         | √                    |        |        |
| 03 | Coastal Association for Social Transformation (Coast Trust)             | √        |               | √                       | √       | √                    | √      |        |
| 04 | ACF Franc   |          | √             | √                       | √       | √                    | √      |        |
| 05 | World Vision Bangladesh   |          | √             |                         | √       | √                    |        |        |
| 06 | Qatar Charity   |          | √             | √                       | √       |                      |        |        |
| 07 | Samsal Bangladesh   |          | √             | √                       | √       | √                    |        | √      |
| 08 | NUSRA(Network for Universal Services and Rural Advancement)             | √        |               | √                       | √       | √                    | √      |        |
| 09 | IUCN<br>(International Conservation Union)                              |          | √             |                         |         |                      |        |        |
| 10 | Save the Children International   |          | √             | √                       | √       |                      | √      | √      |
| 11 | Allama Fazlullah Foundation   | √        |               | √                       | √       | √                    |        | √      |
| 12 | MSF (Holland)   |          | √             |                         |         |                      | √      | √      |
| 13 | SAMARITAN PURSE   |          | √             |                         |         |                      | √      | √      |
| 14 | BRAC  | √        |               | √                       | √       | √                    | √      |        |
| 15 | Bangla German Sompreeti   | √        |               | √                       |         |                      | √      |        |
| 16 | IFRC (International Federation of Red Cross and Red Crescent Societies) |          | √             |                         |         |                      | √      | √      |
| 17 | ICRC (International Committee of the Red Cross)                         |          | √             |                         |         |                      | √      | √      |
| 18 | UNHCR   |          | √             |                         |         | √                    | √      |        |
| 19 | WFP   |          | √             | √                       |         |                      |        |        |
| 20 | Global One  |          | √             | √                       | √       |                      | √      |        |

From the study it was found that Rohingya refugees are cutting down social and natural forests to make shelters and for fuel wood for cooking. Cox’s Bazar South forest division measured the total casualties. They estimated that 3,918 acre forest land and 1,879 acre garden land damaged in Ukhiya range due to providing shelter for Rohingya. The study discovered that in total 3,517 acres of forestland have been destroyed containing 1,199 acres social forest and 2,318 acres of natural forests. It was also found that total Tk 4,112,862,671 worth of damage comprising Tk 2,138,853,414 of social forest and Tk 1,974,009,257 of natural forests, respectively (Hossain, 2018). According to the observation, refugees have been burning a huge amount of firewood. From the survey it was found that 51% Rohingya people are dependent on market and forest for fuel wood. The majority (98%) of local people blamed that the refugees are responsible for deforestation particularly for cutting trees from the reserve forest. Rohingya refugees are causing significant destruction to the surroundings through clearing forest and hill cutting for their shelter, UniversePG | [www.universepg.com](http://www.universepg.com)

residing here and there. On the other hand, 42% Rohingya refugee said that they collect wood from only forest. Of them 15 respondent collect wood from only ration shop as well as 8 refugees collect wood from both market and ration shop. They said that they got wood from ration shop but it is insufficient for their cooking. Alamgir (2017) revealed that 40% of the Rohingya living in different sites and they used source fuel 61% from local forests and 39% from local markets.



**Fig 2:** Deforestations rate in camp areas (Source: Department of Forestry, GoB)



According to Khan *et al.* (2012) 92.5% of the Rohingya refugee to be totally dependent on forest, 5% to be moderately dependent on forest and 2.5% to be less dependent on forest. Hassan *et al.* (2018) found that 35% local respondents think that 80-90% forest areas have been destroyed due to providing shelter to the refugees. But, only 20% refugee respondents agreed that refugees destroy 60-70% forest. Moreover, agricultural production has been greatly damaged in Ukhiya due to Rohingya invasion. Based on the report of agricultural office at Ukhiya upazila, ~60 hectare Boro and ~65 hectare of Aman has been damaged. However, fruits and vegetables of 15 hect-

are and 20 hectare have been damaged, respectively in Palangkhali union. Government and NGOs have taken step to establish shallow and deep tube well in Rohingyas residences. Over 16 million liters of clean water are required daily for refugees (UN children fund, 2018). But un-planned installation of deep tube wells also gratified the underground water table of the locality. Thus, groundwater level of the study area has gone down, might have affected to pump out water with tube-wells in future (COAST Trust study, 2018). The status of water and sanitation in Rohingya residences has shown in **Table 4**.

**Table 4:** Summary of Rohingya camp water and sanitation indicators (Source: RRRC, DPHE).

| Indicators  | Number  |
|---|---------|
| <b>Refugees camp in Cox’s Bazar</b>                                       | 21      |
| <b>Water</b>  |         |
| Constructed shallow tube well by NGO since 9 September 2017               | 2,192   |
| Constructed shallow tube well by government since 9 September 2017        | 5,763   |
| Constructed shallow tube well by government in first step                 | 500     |
| Stated depth of shallow tube well for government (meter)                  | 120     |
| Stated depth of shallow tube well for NGO (meter)                         | 100     |
| Stated final depth of shallow tube well for NGO (meter)                   | 100-170 |
| Stated final depth of shallow tube well for government (meter)            | 200-220 |
| Constructed deep tube well by government since 9 September 2017 initially | 600     |
| Constructed deep tube well depth by government (meter) initially          | 250     |
| Water consumed per person (Liters)  | 22      |
| Water consumed per day (ML)   | 18.26   |
| Depletion of ground water (Feet)  | 25      |
| <b>Sanitation</b>   |         |
| Total latrine construed by partners                                       | 38,981  |
| Total latrine assessed  | 31,173  |
| Total latrine need to be decommission                                     | 6,756   |

In line with the survey 100% local people think that natural environment of the study area is being polluted day by day. 72% local respondent said that refugees dumped their waste scattered despite of planned dustbin system in the camp. Other 27% respondent thinks, refugees dump their waste scattered, but in a certain area which is restricted for them. However, 6 distinct respondents from total of 21 respondents, who are senior members of the society (Union Parishad member, ex UP member, and Village matabbar) reported that refugees are polluting upper stream of 4 major canals coming out from the Rajapalong hill area, which are flowing the downstream. According to the respondents, Rohingya migrants will hamper agricultural production due to severe pollution of upstream surface water. Most of the houses in Rohingya camps are made of plastic

sheet, tarpaulin, bamboo, wood and Aluminium. Drinking water is supplied with plastic containers. They carry their food products with polythene bags and polythene sacks. They collect cooking oil in plastic bottles and most of them (discarded containers, plastic bags, kitchen wastes) are dumped elsewhere, which is creating waste burden for the local environment. **Table 5** shows that the level of noise around the refugee camps varied from 55 dB to 77 dB with various time of the day. According to the Noise Pollution Control Rules (2006) the acceptable sound condition for Bangladesh is 50 dB for daytime and 40 dB for the night in silent areas, 50 dB for daytime and 45 dB for the night in residential areas (DoE, 2017). This study was observed that the sound limit crossed the acceptable level of Bangladesh in residential areas (**Table 5**).

**Table 5:** Noise level in different places of refugee camp (in dB) (Source: Field measurement).

| GPS Co-ordination                | Area name                       | Sound (dB) | Time  |
|----------------------------------|---------------------------------|------------|-------|
| 21° 11.391 N and 092° 09. 582 E  | Balukhali Rohingya camp c block | 65         | 2 PM  |
| 21° 11.386 N and 092° 09. 997 E  | Palangkhali Bazar               | 77         | 7 PM  |
| 24° 26.470 N and 092° 09. 221 E  | Kutupalong Refugee Camp         | 55         | 12 PM |
| 21° 12. 460 N and 092° 08. 945 E | Kutupalong Refugee Camp         | 70         | 2 PM  |

**Table 6:** Crime creating by Rohingya refugees.

| Types of crime | Respondent (%) |
|----------------|----------------|
| Theft          | 53             |
| Snatch         | 17             |
| Robbery        | 4              |
| Drug supply    | 77             |
| Smuggling      | 77             |

(Source: Field survey)

Several diseases have been found among refugees in the camp area. According to IOM (2018) 446, 247 and 51 people were suffered from invasive pneumococcal disease, chronic obstructive pulmonary disease and front temporal dementia progression, respectively. The study also found top 5 diseases affected the refugees include respiratory tract infection, unnamed fever, skin disease, musculo-skeletal problem and generalized weakness. As stated by the survey, 100% of the local people think the Rohingya refugees are a big problem for the society. Actually everyone treat them as problem, no locals have sympathy for them. Most of them informed that refugees are involved with drug smuggling, snatching, theft and robbery. In fact, some local newspapers published news upon diverse of crime and corruption related to Rohingya refugee. Despite of several armies, BGF and police checking point refugees engaged in smuggling, drug trafficking like Yaba, a stimulating drug with help of local people. They use off road through the hilly forest area where sentry post is not existing and types of crime stated by the local respondents (Table 6).

**CONCLUSION:**

We conducted this study in Kutupalong and Balukhali Rohingya camps, which are situated in Ukhiya Upazilla of Cox’s Bazar to find out the effects of Rohingya migrants on the environment of the area studied. It is expected that 3,918 acre forest land and 1,879 acre garden land has been cleared in Ukhiya range for the shetering purpose Rohingya migrants. This study revealed that the Ruingya immigrants have damaged total 411.30 million BDT worth of forests in the study area. Moreover, field survey data

showed that 51% Rohingya people are dependent on market and forest for fuel wood. However, 98% of the local people blamed that the refugees are cutting trees from the reserve forest for cooking purpose. Moreover, agricultural productivity has been declined significantly in Ukhiya due to Rohingya invasion. It is noted that ~60 hectare Boro and ~65 hectare of Aman has been damaged in Ukhiya upazila. Ruingya refugees are polluting upper stream of 4 major canals coming out from the Rajapalong hill area, which will hamper agricultural production in upcoming days. Furthermore, noise level has been measured nearby of the refugee camps and observed that noise limit crossed the acceptable level for residential areas of Bangladesh. Finally, the migrants have drastically decreased social harmony of the study areas since they are involved in various antisocial activities including drug smuggling, snatching, theft and robbery.

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**CONFLICTS OF INTEREST:**

We agreed that we don’t have any conflicts for the possible publication of this

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