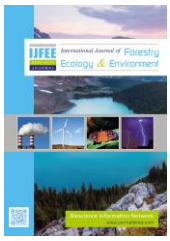
Published with Open Access at Journal BiNET
Vol. 04, Issue 01: 163-171
International Journal of Forestry, Ecology and Environment
Journal Home: https://www.journalbinet.com/ijfee-journal.html



Impact of climate change on socio-economic condition of environmental migrants at Korean Development Corporation (KDC) slum area in Barishal, Bangladesh

Md. Tariqul Islam[1], Ananya Mukherjee[2], Sadia Islam Nishi[3], Ayesha Siddiqua[4] and Mawya Siddeqa[2]

[1]Department of Environmental Science, Patuakhali Science and Technology University, Dumki, Patuakhali, Bangladesh.
[2]Department of Geo Information Science and Earth Observation, Patuakhali Science and Technology University, Dumki, Patuakhali, Bangladesh.
[3]Department of Environmental Sciences, Jahangirnagar University, Dhaka, Bangladesh.
[4]Department of Disaster Resilience and Engineering, Patuakhali Science and Technology University, Dumki, Patuakhali, Bangladesh.

*Corresponding author: tariqulens@pstu.ac.bd (Islam, MT), Contact Number: +8801758952765
Article received: 10.04.21; Revised: 04.05.21; First published online: 15 May, 2021.

ABSTRACT

Environmental migration is a recurrent phenomenon in Bangladesh. Though this phenomenon is not considered in national strategic planning properly, but greatly influences social and economic well-being. Authors try to identify the root cause of environmental migration with nature of migration; impacts of climate change on socio-economic condition of the environmental migrants at the Korean Development Corporation (KDC) slum in Barishal, Bangladesh. In order to fulfill the objectives of the research, both primary and secondary data have been collected from various sources. Primary data collection methods include face to face individual survey, focus group discussion and key informants interview while secondary data sources are journal article, book chapter, newspaper article and visiting website like DRR and BDRCS. Major findings are different climatic hazards like flood, cyclone, extreme weather, river erosion and waterlogging was the main hazard in the selected area. The hazards affect the migrants (about 80%) most as they live under the poverty line and more vulnerable to climate change. It is clear from the study that climate change badly affects the socio-economic status like settlement, education, health, job opportunities and livelihoods of the environmental migrants. Proper management and national policies can eradicate the problems of climate change faced by migrants.

Key Words: *Climate Change, Environmental Migrants, Impact, Livelihood and Socio-Economic Condition.*

Cite Article: Islam, M. T., Mukherjee, A., Nishi, S. I., Siddiqua, A. and Siddeqa, M. (2021). Impact of climate change on socio-economic condition of environmental migrants at Korean Development Corporation (KDC) slum area in Barishal, Bangladesh. International Journal of Forestry, Ecology and Environment, 04(01), 163-171. **Crossref:** https://doi.org/10.18801/ijfee.040121.18

Published with open access at journalbinet.com.
EISSN: 2708-5430, © 2021 The Authors, Research paper.

I. Introduction

Bangladesh is a densely populated country (holding third position in South Asia) having about 4,19,43,532 (or just over 28% of total) urban population residing in the metropolitan region (BBS, 2011). Besides, the growth rate (presently 2.96% annually) of urban population is very high after the liberation war in 1971 (BBS, 2011). Actually, this rapid growth occurs in the metropolitan area due to migration of rural and needy people for fulfillment of their basic needs, which they have failed in rural areas. Generally, people decide to be migrated when they fail to cope with the crisis by using his/her resources (Kamal, 2013). So, when the local environment (especially home region) of the people goes through sudden or long term changes due to natural or anthropogenic causes; people have failed to cope up finally they have to face forced displacement from their native home region, the environmental migration has been occurred (World Bank, 2006). Hence, those types of poor migrated people continuously entered the city region and foundout settlement at slum or trespasser area. The slum population is 49,401 in Barishal divisions and all of them are environmental migrants (BBS, 2011).

According to the Red Crescent Society Barishal branch assessment, Barishal City Corporation contains at least 18 slums full of environmental migrants, but the migrants living in KDC area have experienced at least one major climate change impact with highest intensity of climatic risk. About 4593 environmental migrants lived in KDC and among them, 27.14 % of environmental migrants own their house, while 45.87% lived in rented tenements and 6.99 % without paying any rent (UNDP, 2013). All of the migrants lived under poverty line. The vulnerable geophysical location and poor socio-economic condition made them highly susceptible to different natural disasters like cyclone, storm surges, riverbank erosion, tidal surges, tidal floods, freshwater scarcity and caused devastating impacts on their life and livelihood (Hossain, 2005). They failed to secure a minimum living standard of livelihood for a human being. The climatic hazards caused loss of lives and property damages in the area (UNICEF, 2011). The study was conducted to assess the livelihood of environmental migrants at KDC to determine the impacts of climatic hazard on migrants' lives and livelihood.

Climate change is the biggest issue which affected the environmental migrants of slum area (Akter, 2009). Research found that climatic hazard presented one of the greatest development challenges at that time and it was clear that eradicating poverty and inequality couldn't be achieved without addressing the causes and consequences of climatic hazard impact. So, there is a need to identify the climatic risk faced by the migrants, prioritize them and assess and analyze the impact on migrants' livelihood. In this regard, the community people were the prior experienced, so their perception, knowledge, ideas etc. was given higher priority to conduct this research.

II. Materials and Methods

Description of the study area

For research, KDC area in ward no. 10 under Barishal City Corporation was selected as around 4593 environmental migrants live there. Total area coverage is 5.91 sq. km; geographical location is 22°38' to 22°45' north latitudes and 90°18' to 90°23' east longitudes. Kaunia and Airport Thana on the north while Bandar thana and Bakerganj upazila on the south (Figure 01) . Total population is about 4593, among 2785 males and 1808 females (BBS, 2011). Main River is Kirtonkhola, very adjacent to KDC region and livelihood of the slum dweller largely influenced by this river. Occupation of the residents is mainly day labourer, rickshaw puller, auto driver, prostitution, wage earner etc. (BBS, 2011).

Data collection

Research has been conducted by following both qualitative and quantitative approaches. For the quantitative method, face-to-face individual surveys were conducted with selected respondents (80 individuals) by the help of pre-tested and earlier prepared questionnaires. Data has been collected from February, 2019 to April 2019. Moreover, some qualitative studies were performed using ward consulting meetings, 8 Key Informant Interview (KII) and 10 Focus Group Discussion (FGD). For Conduction of FGD and KII, a short checklist was developed focusing on key parameters and finding out solution from the representatives. In order to develop conceptual basis of study, the secondary information was collected from different relevant sources, such as books, journals, thesis, abstracts,

Published with open access at journalbinet.com.
EISSN: 2708-5430, © 2021 The Authors, Research paper.

reports and websites etc. Documents were also collected from various organizations like BDRCS, UNICEF, BRAC, Barisal office, KFW office to fulfill the purpose.

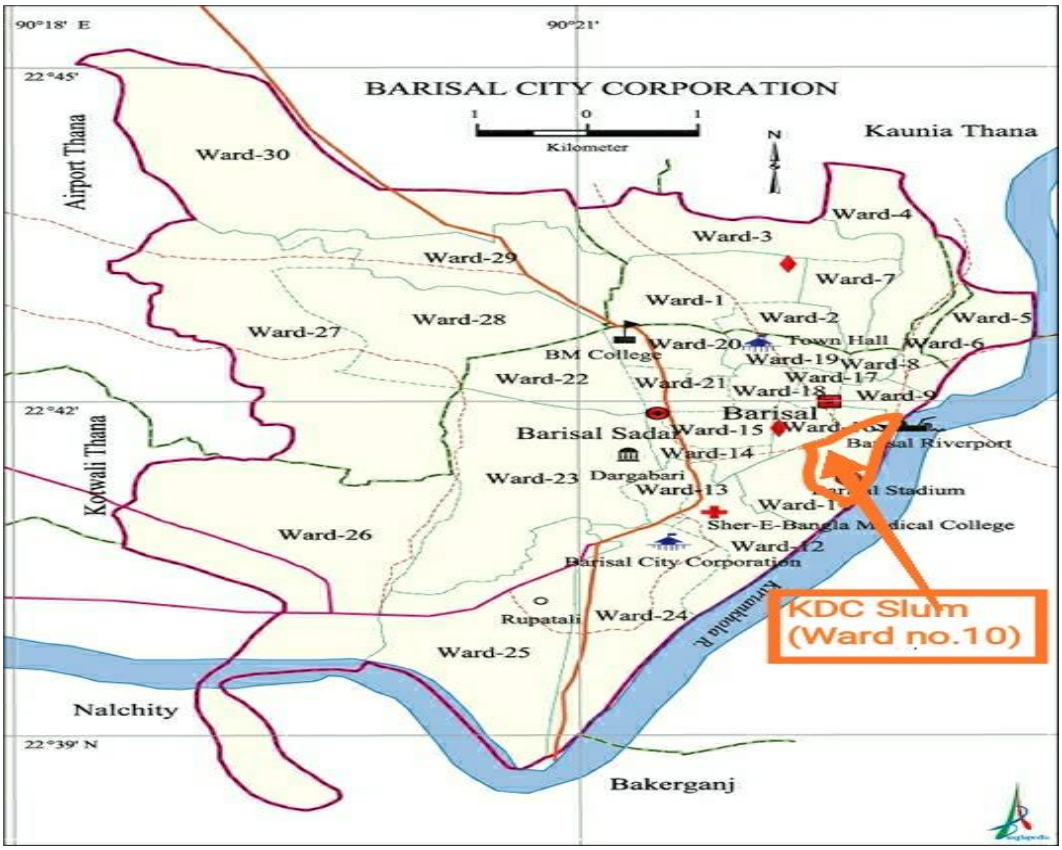


Figure 01. Study area map (KDC slum) (BCC, 2007)

III. Results

Factors of migration

Environmental migrants are displaced due to environmental causes like land loss, any persecution for living, slow onset (drought, sea level rise, tidal inundation etc.) disaster or sudden (riverbank erosion, flood, cyclone, storm surges, earthquake, fire etc.) catastrophe. In the study area, 4593 environmental migrants faced many climatic hazards (BBS, 2011). One of the immediate impacts of climatic hazard on the area was riverbank erosion caused displacement of migrants. The migrated people usually move to nearby areas, but sometimes migrations to distant place were not unusual. The push factors and the pull factors were also the major reason behind environmental migration. The baseline survey showed that 79.7% migrants were migrated every year for "push factors" and 20.3% were migrated for the "pull factor" shown in Table 01.

Table 01. Reasons for migration from rural to urban area

Reasons	Reasons of urban migration	Percentage (%)
Push factors	Flood or landlessness and Unemployment	32.6
	Insufficient and unproductive land	12.5
	Meager income	9.6
	Landlessness/Homeless	5.00
	Others (poverty, Economic condition, Antisocial work etc.)	20
	Total	**79.7**
Pull factors	Search of employment and better income	10.3
	Urban attraction	7.9
	Friends and relatives resided and motivated them for migration	2.48
	Total	**20.3**
	Total number of cases	**100**

Published with open access at journalbinet.com.
EISSN: 2708-5430, © 2021 The Authors, Research paper.

From Table 01, it was found that push factors are predominant over pull factors. Due to inferior building materials, houses became vulnerable to cyclones and wind damage; thus migration to KDC area was a regular occurrence in recent years. It was observed that natural disasters induced by climate change have increased in scale of frequency and severity; having physical impact on environmental migrants also have secondary impact on livelihoods of KDC migrants by increasing poverty and making them exposed for further hazard that ultimately increase the vulnerability of the community. The rural migration in the study region creates extra pressure round the year and people (who are not native) here come from different region. Study found that about 14% people have been migrated in Chittagong region, while 16% at Dhaka, at Barishal 31% and 19% at other cities (Figure 02). A growing number of migrated people in (KDC) area also increased urban crisis in Barishal city. Migrated people are more socio-economically vulnerable as they have passed maximum time to search for food and better housing. Furthermore, they took shelter in slum areas as it is quite affordable for them. The KDC slum area of BCC, Barishal, Bangladesh, is mostly low lying land only few feet above sea level; having very high environmental risk for residents as natural calamities frequently attack there, also the economic and social condition of the migrants is fragile, which ultimately create pressure for local government authority to take any development activities.

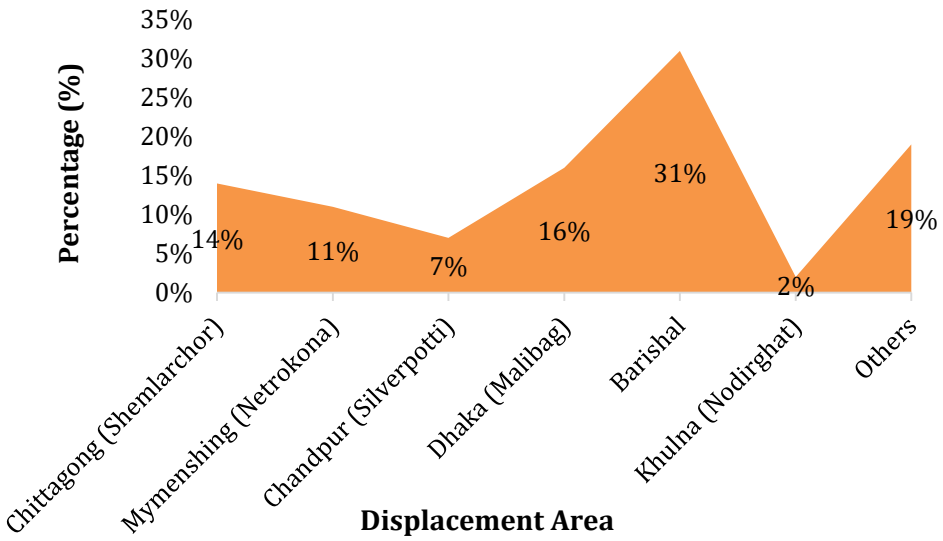


Figure 02. Migration rate in different cities (Sources: BBS, 2015**)**

The migration rate in Barishal city is very high about 31% (BBS, 2015). For that reason, the environmental migrants were increased day by day in (KDC) area and create a particular pressure in the city. Usually, it was claimed that many poor people came to Barishal city, especially for livelihood purpose, which highly contributed to creating slums in KDC area. The education level of the migrated people is not so high that's why they are involved such low income profession likes day labourer, small business, NGO worker etc. Besides, their poor income and fewer saving made them more vulnerable to the climatic hazards.

Reasons for displacement of environmental migrants

The displacement of people from rural areas to urban or city areas was the main reason for the growing migration at KDC in Barishal city. 'Urban attraction' and 'rural distractions' had gradually persuaded Migrants to displace throughout the last decade. Besides these, 23% of people migrated to the area because of poverty. Landlessness, job opportunity, wheedle, political influence, climatic hazards and social conflicts were also some key factors behind migration of people in the study area.

Landless: The number of landless migrants was higher than government statistics and the rate of growth was also high. In rural areas when they need to feed their family and they didn't have enough land to live, income and selling their land were the only way to survive. With no choice, they had to move to urban area for landless and better health services. About 6% of migrants were migrated to KDC area in Barishal city as they were landless.

Published with open access at journalbinet.com.
EISSN: 2708-5430, © 2021 The Authors, Research paper.

Better job opportunity: Better job opportunity was the major factor of people's migration. The migrants thought that if they migrate to urban areas, they will get better job opportunities. Figure 03 showed that 11% of migrants were migrated to KDC area in Barishal to find out better jobs. However, the arrival of migrants in urban areas increased competition for the job, houses, school facilities etc.

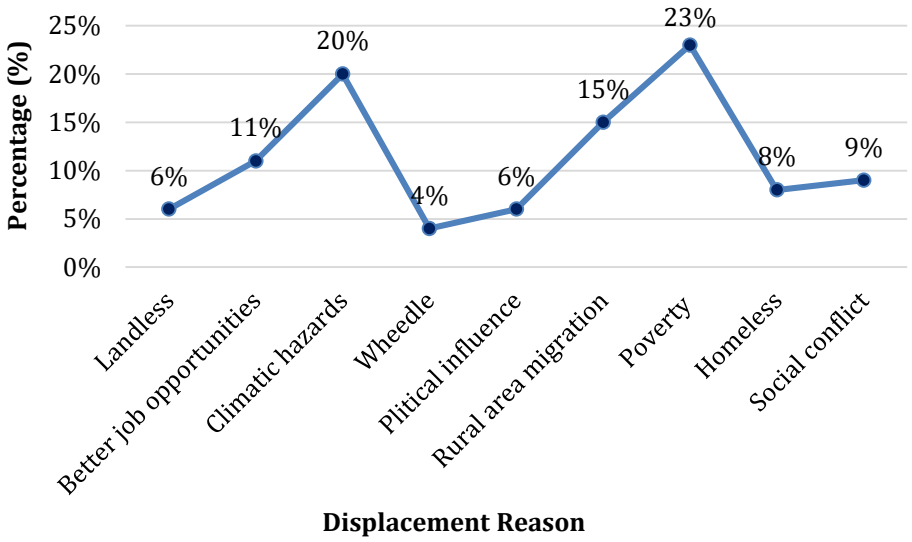


Figure 03. Reasons for displacement of the migrants

Natural calamities: From Figure 03, about 20% of migrants were displaced for natural calamities such as riverbank erosion. Many migrants die each year due to various natural calamities like floods, riverbank erosion, tsunami, earthquake etc. People did not want to live in those areas where there was high chance of flood, riverbank erosion, tsunami, earthquake etc. They wanted to live in safer places and so, many people migrated from different places to the study area to escape from the natural calamities.

Wheedle: 4% of migrants were wheedled and they were migrated (Figure 03) for loss of land. As a result, they involved in various antisocial work such as drug addiction, alcoholism, prostitution, robbery, child abuse etc. They also involved in crime, pollution and congestion.

Political influence: Politics influenced the migration of environmental migrants. Civil war or escaping from political harassment was an example of political cause or reason behind migration. 6% of migrants people are migrated to KDC area for this reason.

Rural area migration: Poverty is a common factor for peoples' migration, as poor people take different strategies to survive in the crucial earth. Poor people generally expense money to take minimum food and clothing, health, water and sanitation and invest in children's education. But their source of income at rural areas is limited; basically wage earning, limited scope for rickshaw or auto driving, but scope of diversified income source is available at city area that's why many people get migrated from rural to urban area. Besides, sometimes people take loan with high interest from different local to national non-government organization (NGO) or from any local foundation or society, most of the time they failed to return the money that's why they try to hide for return of money and take shelter in city area by being migrated from village. The study found that about 15% of people migrated to KDC region for such an issue.

Poverty: Poverty had conflicting effects on migration and 23% of environmental migrants were migrated to the study area for extreme conditions such as hunger and starvation due to poverty (Figure 03). They realized that if they were migrated into urban areas, they would live their lives in less poverty. So, they were migrated in urban areas like KDC day by day.

Published with open access at journalbinet.com.
EISSN: 2708-5430, © 2021 The Authors, Research paper.

Homeless: Homelessness was a large example of displacement. Displaced migrants were perpetuated due to the inability to find stable housing, income, or assistance and for these, 8% of people migrated into KDC at Barishal city (Figure 03).

Social conflict: Social conflict was one of the vital causes of the formation and expansion of migrant's slums. A minimum of 9% of migrants were migrated for social conflict of rural area (Figure 03).

Mostly affected hazards faced by the KDC community

Migrated people at KDC slum in Barishal have faced different hazards in frequent times. Climate change triggers the intensity and frequency of the hazards. Research found that waterlogging, riverbank erosion, cyclone and high temperature occurred more or less every year in the area due to climate change. About 17% of migrants have been affected by extreme heat and cold, 15% migrants affected by riverbank erosion and 13% migrants suffered from water logging in the area (Table 02).

Table 02. Climate change induced hazards faced by environmental migrants in KDC slum

Climate change induced hazards	Impact
Waterlogging (13%)	-Averse effect on Migrants health due to water borne diseases -Problem in food intake (difficulties in food storage making and supply) -Transportation and communication badly affected -Degradation of Environmental quality
Drainage problem (21%)	-Water sources were destroyed -Damaged household sources affected environmental species.
High temperature (11%)	-Affected the life expectancy of the migrants
Water scarcity (2%)	-Lack of safe drinking water intake and water collection -Poor quality of water lead to illnesses like diarrhea and other water borne diseases
Riverbank erosion (15%)	-Re-migration of the migrants

Impacts of climate change on socio-economic conditions

Impacts on livelihood: The monthly income of the migrants was not in satisfactory level. About 18% respondents' mention that their monthly income was below 3000 BDT while 52% said that they earn in the range of 3100 BDT to 10,000 BDT per month and only 30% respondents said that they have income above 10,000 BDT per month. The monthly income results highlights that the variation of livelihood result in variation of income. Among the migrants, 14 % were farmers and 2% fishermen, 31% day laborers, 9% involved in small businessmen, 12% rickshaw puller and 24% were in service. Low monthly income lowered the ability to maintain standard of living and to cope with adverse impact of any natural hazard of migrants at KDC area. A few NGOs and government institutions came up with some helps in times of natural calamities, but those did not seem sufficient to meet their needs from erratic rainfall to flash floods, from heat waves to cold waves, the impacts of climate change forced migrants to search for new livelihoods. Climate change also threatened resources and the goods and services produced and the jobs and livelihoods of those who depend upon those in the area. The nature of earning sources plays a key role in being impacted by climate change. Such as people who depend more on river resources may be hampered for long time due to unwanted changes in river like flood, tidal wave, fish migration etc. Furthermore, due to heat or cold waves, daily wage earner health conditions get impacted as occupational risk is a major hindrance for most cases.

Impacts on shelter and settlement: Shelter is an important social determinant of migrant's people. Hot days were hotter and more frequent, and heavy storms occurred with greater intensity and loss in the KDC slum area. Besides this, river erosion and water level of Kirtankhola River raised at an alarming rate there. The result of these is threatened homes and critical infrastructures of the migrants. Hence, 10% of them lost their settlement to riverbank erosion.

Impacts on health condition: Climate change posed significant threats to the health of the migrants living in KDC area. The vulnerable group, including women, children, adults, pregnant women, handicapped etc., are more susceptible to climate-induced natural hazards, especially in the health sector. Different types of fever are common here. Gastrointestinal illness like diarrhea, respiratory

Published with open access at journalbinet.com.
EISSN: 2708-5430, © 2021 The Authors, Research paper.

systems, liver and kidney damage, heat stress and cold diseases were common in the migrated people. About 49% of children became ill, mostly due to climate change and 30% of female respondents and 21% of male also suffered from climate related diseases (Table 03).

Table 03. Health impact due to climate change

Disease	The main causes of the disease	Impact
Diarrhea	Water pollution through flood, storms and water level rise	-Every year migrants' children were mostly affected by diarrhea -Children mortality rate 42%
Fever	Temperature variation	- Occurrence of frequent fever is a common impact of temperature variation -Typhoid is common in study area having large amount of health risk
Dengue	Mosquito breeding in the waterlogging	-It badly impacts on the Migrants population
Cold disease	Extreme cold, dust	-153 (14.9%) were mostly affected by diseases of the respiratory system (cold/ cough/asthma/ tonsillitis/ pharyngitis)
Heat stress	Temperature rise	-Food poisoning -Increased mortality rate for rising temperature
Pneumonia	Polluted water, changes in precipitation	-8% died every year -Women and children affected highly

Impacts on education: Local weather and climate condition largely regulate the education system for any locality. Any kind of climatic disturbance (cyclone, nor'easter) directly hampered the physical educational structure; school going children and kids get temporarily unable to go to school. Sometimes, people lost their income and food security caused by natural calamities and become unable to pay school fees so about 46% of children dropped out of school (Source: Field survey). During extreme cold and rain, girls missed school because they had to travel longer distances. Moreover, migrated children of the KDC area affected by various types of climatic hazards related diseases and couldn't go to school. Educational institutes also affected by climate change such as riverbank erosion in the area which is another reason for hampering education.

Impacts on food and nutrition: In the study area, people suffered a lot in managing foods during several climatic phenomena. They have suffered from lack of nutrition. During water logged situations, food making and food collection are two major problems faced by 58% and 22.59% of respondents, respectively. Daily food intake, quality food intake or food intake frequently, all those three types of food intake criteria get hampered during any crisis moment as people bound to reduce the number of meal, take spoiled food sometimes, or if the situation worsens then they sometimes get food starvation. Generally, they wait for help of others like the government, non-government organizations, social workers or other response bodies during any emergency. At this time, about 11.15% of households faced problem of food storage. Besides, 71% of respondents denote that they don't get a minimum level of food supply during storm surge and flood situations.

IV. Discussion

Due to spatial and locational features the migrants of KDC slum region of BCC have frequently faced climate change and natural hazards. Similar conclusions have been made by different scholar and found that the impacts of climate change induced natural hazards vary due to spatial and regional features (UN-HABITAT, 2003; Mortreux and Barnett, 2009). The present research found that about 20% of migrants have been displaced due to natural hazards like riverbank erosion, sea-level rise induced tidal flood etc. A case study conducted by Bronen (2010) depicts that search for better job opportunities, political influence, natural calamities and poverty influences migration of people in an alarming rate. A similar result has been found in this research where landlessness and unemployment (32.6%), insufficient and unproductive land (12.4%), social conflict (9%), political influence (6%) are also influenced to migrate people. Besides, this research disclosed that climatic hazards like flood, river erosion, heat stress, fog and extreme rainfall affected 70% of the respondents' shelter and

Published with open access at journalbinet.com.
EISSN: 2708-5430, © 2021 The Authors, Research paper.

housing conditions during the last decades. A huge number of scholar projected that due to locational characteristics Bangladesh, especially coastal region has facing worst situation due to climate change; resulting having tremendous impact on life and livelihood, health and education and social well-being of the environmental migrants too (House, 2007; Raleigh et al., 2008; Warner et al., 2009; McMichael et al., 2012; Awal, 2013; Connell, 2016; Gautam, 2017). Similar findings of this study also can be realized here that the health condition of about 49% of children most affected by the impacts of climate change and education of the children of the migrants affected by extreme temperature and weather conditions. Furthermore, the changes in livelihood pattern of the migrants also focused in this research while a case study conducted in Bangladesh, India and Indonesia showed the changing pattern of migrants' livelihood for climate change (Warner et al., 2010; Tanner et al., 2015). Another paper showed that climate shocks and stress like cyclone, flood and heat stress cause fragile livelihood, lack of social protection and infrastructural damages (Kartiki, 2011).

V. Conclusion

Environmental migration is a common issue in many countries in all parts of the world, though nature may vary from each other. It is a vast problem for the socio-economic sector of our country too. Environmental migrants have facing climatic hazards at KDC slum in Barishal city, not a recent phenomenon. The migrants of this area had been experiencing many problems for the last 20 years. Research found that the structural and socio-economic conditions were not well in (KDC) area due to climate change impacts. Flood, storm surge, riverbank erosion, water level rise, heatwaves and cold waves were extreme climatic events faced by the migrants of KDC area. In the area about 67% of households affected by climatic hazards each year among them, children and older people affected most. 70% of respondents were vulnerable to climate change in the area and 10% of them lost their settlement for riverbank erosion. 49% of children became ill and 46% of children dropped out of school due to extreme climatic events.Moreover, 71% of migrants were not capable of taking normal food intake 3 times a day during hazardous conditions like storms, floods and heat stress. The livelihood of the migrants of KDC area was also highly affected by these types of climate change phenomena. Proper awareness, management system, comprehensive national policies, non-governmental activities and administrative policies can minimize the future impacts of climate change on environmental migrants at KDC slum in Barishal city. These will improve their lifestyles by improving income generation.

References

[1]. Akter, T. (2009). Migration and living conditions in urban slums: implications for food security. Unnayan Onneshan, The Innovators, Centre for Research and Action on Development, Dhaka, Bangladesh.

[2]. Awal, M. A., Rashid, M. H. A., Islam, A. F. M. T. and Imam, M. F. (2013). Adapting social safety net programs to climate change shocks: issues and options for Bangladesh. National Food Policy Capacity Strengthening Programme. Dhaka.

[3]. BBS (2011). The Statistical Year Book of Bangladesh. Bangladesh Bureau of statistics, Ministry of planning. Dhaka, Bangladesh.

[4]. BBS (2015). Population distribution and internal migration in Bangladesh. Bangladesh Bureau of Statistics. Statistics and Informatics Division (SID). Ministry of Planning. Government of the People's Republic of Bangladesh. ISBN- 978-984-33-9951-9.

[5]. BCC (2007). Field report' and Cultural survey report of Barisal City Corporation. (Online available at: http://en.banglapedia.org/index.php?title=Barisal_City_Corporation).

[6]. Bronen, R. (2010). Forced migration of Alaskan indigenous communities due to climate change. In Environment, forced migration and social vulnerability. Springer, Berlin, Heidelberg: 87-9. https://doi.org/10.1007/978-3-642-12416-7_7

[7]. Connell, J. (2016). Last days in the Carteret Islands? Climate change, livelihoods and migration on coral atolls. Asia Pacific Viewpoint, 57(1), 3-15. https://doi.org/10.1111/apv.12118

[8]. Gautam, Y. (2017). Seasonal migration and livelihood resilience in the face of climate change in Nepal. Mountain Research and Development, 37(4), 436-445. https://doi.org/10.1659/MRD-JOURNAL-D-17-00035.1

[9]. Hossain, S. (2005). Poverty and vulnerability in megacities: the case of migrants slum communities in Dhaka City, Bangladesh. In Annual Conference of the Australian Sociological Association (TASA):5-8.

[10]. House, Q. E. (2007). Environmentally displaced people: Understanding the linkages between environmental change, livelihoods and forced migration. Refugee Studies Centre, University of Oxford.

Published with open access at journalbinet.com.
EISSN: 2708-5430, © 2021 The Authors, Research paper.

[11]. Kamal, A. (2013). Migration and living conditions in Urban Slums: Implications for Food Security in Dhaka City, Bangladesh. In Annual Conference of the Australian Sociological Association (TASA):5-8.
[12]. Kartiki, K. (2011). Climate change and migration: a case study from rural Bangladesh. Gender & Development, 19(1), 23-38. https://doi.org/10.1080/13552074.2011.554017
[13]. McMichael, C., Barnett, J. and McMichael, A. J. (2012). An ill wind? Climate change, migration, and health. Environmental health perspectives, 120(5), 646-654. https://doi.org/10.1289/ehp.1104375
[14]. Mortreux, C. and Barnett, J. (2009). Climate change, migration and adaptation in Funafuti, Tuvalu. Global Environmental Change, 19(1), 105-112. https://doi.org/10.1016/j.gloenvcha.2008.09.006
[15]. Raleigh, C., Jordan, L. and Salehyan, I. (2008). March. Assessing the impact of climate change on migration and conflict. In paper commissioned by the World Bank Group for the Social imensions of Climate Change workshop, Washington, DC: 5-6.
[16]. Tanner, T., Lewis, D., Wrathall, D., Bronen, R., Cradock-Henry, N., Huq, S., Lawless, C., Nawrotzki, R., Prasad, V., Rahman, M. A. and Alaniz, R. (2015). Livelihood resilience in the face of climate change. Nature Climate Change, 5(1), 23-26. https://doi.org/10.1038/nclimate2431
[17]. UNDP (2013). The Challenges of Environmental Migrants: Children on the Front Line. (Online available at: http://www.unicef.org/bangladesh/4926_6202.htm).
[18]. UN-HABITAT (2003). The Challenge of Slums: Global Report on Human Settlements. London/ Sterling,VA: Earthscan Publications Ltd.
[19]. UNICEF (2011). Children's Vulnerability to Climate Change and Disaster Impacts in East. (Online available at: http://www.unicef.org/bangladesh/4926_4990).
[20]. Warner, K., Ehrhart, C., Sherbinin, A. D., Adamo, S. and Chai-Onn, T. (2009). In search of shelter: Mapping the effects of climate change on human migration and displacement. CARE International. Available at: http://www.careclimatechange.org
[21]. Warner, K., Hamza, M., Oliver-Smith, A., Renaud, F. and Julca, A. (2010). Climate change, environmental degradation and migration. Natural Hazards, 55(3), 689-715. https://doi.org/10.1007/s11069-009-9419-7
[22]. WORLD BANK (2006). Social Safety Nets in Bangladesh: An assessment of livelihood migrants people, Bangladesh Development Series Dhaka: 9.

HOW TO CITE THIS ARTICLE?

MLA
Islam, M. T et al. "Impact of climate change on socio-economic condition of environmental migrants at Korean Development Corporation (KDC) slum area in Barishal, Bangladesh". International Journal of Forestry, Ecology and Environment, 04(01) (2021): 163-171.

APA
Islam, M. T., Mukherjee, A., Nishi, S. I., Siddiqua, A. & Siddeqa, M. (2021). Impact of climate change on socio-economic condition of environmental migrants at Korean Development Corporation (KDC) slum area in Barishal, Bangladesh. *International Journal of Forestry, Ecology and Environment*, 04(01), 163-171.

Chicago
Islam, M. T., Mukherjee, A., Nishi, S. I., Siddiqua, A. and Siddeqa, M. "Impact of climate change on socio-economic condition of environmental migrants at Korean Development Corporation (KDC) slum area in Barishal, Bangladesh". International Journal of Forestry, Ecology and Environment, 04(01) (2021): 163-171.

Harvard
Islam, M. T., Mukherjee, A., Nishi, S. I., Siddiqua, A. and Siddeqa, M. 2021. Impact of climate change on socio-economic condition of environmental migrants at Korean Development Corporation (KDC) slum area in Barishal, Bangladesh. International Journal of Forestry, Ecology and Environment, 04(01), pp. 163-171.

Vancouver
Islam, MT, Mukherjee, A, Nishi, SI, Siddiqua, A and Siddeqa, M. Impact of climate change on socio-economic condition of environmental migrants at Korean Development Corporation (KDC) slum area in Barishal, Bangladesh. International Journal of Forestry, Ecology and Environment, 2021 May 04(01): 163-171.