Bangladesh J. Environ. Sci., Vol. 45, 13-20, 2023 @ BAED ISSN 1561-9206

LIVELIHOOD ADAPTATION STRATEGY OF CLIMATE INDUCED MIGRANTS IN NORTH-WESTERN REGION OF BANGLADESH

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ABSTRACT

This study aims to identify the influencing elements and adaption techniques of slum residents who moves due to climate change. From two slum areas in Rangpur district, a data base of 120 respondents was gathered using structured questionnaires in order to learn about the people's adaptation and migration processes as well as their current way of life. Most of the respondents (43.32%) only completed their primary education, and 54.15 percent of them have weekly incomes of less than 1000 taka. Nearly 77% of people live in tin shacks. Due to river bank erosion, several respondents abandoned their village. Nearly 19% of them were from Mymensingh. Farmers made up about 45% of the respondents. However, as a result of losing their lands, more people, or around 63%, now work as a daily laborer. After migration they were forced to engage themselves in unskilled jobs like day laborer and rickshaw puller. Because of their educational status they couldn't afford themselves into better housing status but also they engaged their children to work to meet their daily need which was costlier than their native place. Due to this dilemma a larger number of the respondents' second generation were involved in an unskilled job also. This study is the baseline of the climate migrants' status because there's no research has been done regarding this issue in the north western region of Bangladesh. Since the city is developing recently so the city planner and policy makers should consider these people to involve them in skilled job so the society can get the maximum benefit from them and also improve their status of life.

Key words: Adaptation, mitigation, climate induce migrants, climate change.

Introduction

Human activities such as generating energy, industrial work that destroys forest and agricultural land resulted the climate change in changing the weather pattern (Yue and Gao 2018). According to Global Climate Risk Index (CRI), from the year 1996 to 2015, a total of 528,000 deaths has been caused in a direct consequence of 11,000 extreme climatic events (Kreft et al. 2016). The countries especially low to middle income level are facing more vulnerabilities to different natural disasters like prolonged flooding, cyclone, storm surges, seasonal drought and sea level rising (Ibarraran 2009; Nakashima *et al*. 2012). So they have to be migrated in severe cases. Migration has been a long-term adaptation technique for displaced people who has been forced to leave their native place due to any kind of natural calamities (McLeman and Smith 2006, Barnett and Webber 2010, Adger *et al*. 2003a,b; Tacoli 2011, Barnett and O'Neill 2012). Migration has been frequent in those countries who faces natural calamities very often. People of low income level migrate seasonally to support their living (Black *et al*. 2011; Kniveton *et al*. 2012). People who lose their housing due to natural disaster ended up in the low-cost housing area mostly slum in the cities thanks to the high cost of rebuilding the house. The "Bhola cyclone" which killed nearly five hundred thousand with a huge number of displaced people who relocate in Mirpur, Dhaka named their slum as "Bhola Slum" after their native place (McNamara *et al*. 2015). People generally migrate to those places where they have a better accessibility to jobs and social network (Black *et al*. 2011, 2013; Kniveton *et al*. 2012; Warner *et al*., 2013). Two different dimensions has been identified as the after effect of climate change which includes the cause dimensions and the consequence dimension. First one includes the disaster and after effect resulted by the climate change and the other one is the socio-economic hardship as well as human right violation etc. (CPRD, 2015). Due to changing climate the disaster can push people to the extent that they forced to move to urban cities like Dhaka, Chittagong Khulna etc. So they can avail an upgraded livelihood. Even people go to another country for well payment and housing. It is predicted that 6-8 million

people will be forced to migrate if the projected sea level rise is more by 2050 (Martin *et al*. 2013). Additionally, study showed that 39 million displacements had been done by flood and a total of 8.5 million migrations had taken place due to cyclone, riverbank erosion and Drought (Khatun, 2003). Many researchers have been done focusing the people in the coastal region of the country (Martin *et al*., 2013; World Bank, 2011); but there is no research has been done focusing the people of the northern and north western region. The people of these regions mostly migrate to the slums of nearly city or metropolitan area like Rangpur. That's why our research area focused on this region. So keeping these contexts in mind the main focus was this research was to analyze the recent trend of climate change and climate induced migration and determining the migration rate and pattern in the north-western region of Bangladesh.

Materials and Methods

Study Area: Our study was focused on the slum area of Rangpur city. The study area has been shown in the map (Fig. 1).

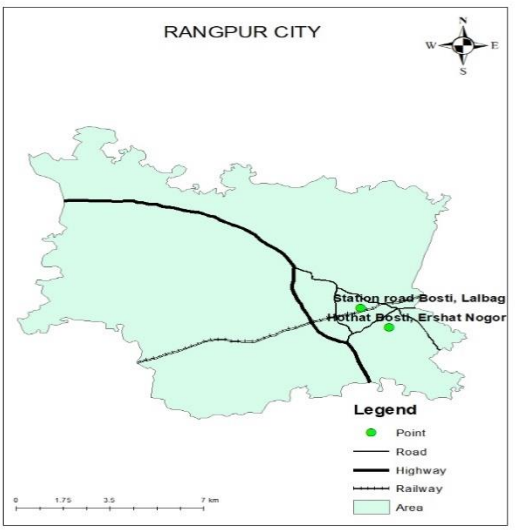

Fig. 1. Study area Map

Study Population: The study population was both men and women who moved from their native area because of disaster. The age range of the respondents was 20-50 years and currently living in the slum area of RpCC.

Questionnaire survey: The questionnaire was conducted in slum areas of Rangpur City to get a hold of maximum number of migrants as possible. According to BBS, 2014; there are 48 slums having 6054 households in RpCC. Snow ball method were used for collecting data from the respondents. In order to gain insight into the migration flows in Rangpur City, the motivation behind these; how the city is dealing with them and to estimate the city's potential offering of sustainable livelihoods the question was asked.

Key Informant Interview (KII): An interview with the key informants was carried out with the people in order to gather information about the problems of migration conditions, losses, perception and causes about migration.

Data Analysis: Data was analyzed by using the SPSS and Microsoft excel tool. Maps were produced by using ArcGIS.

Results and Discussion

The study explored that about 55.83% was male and about 44.17% was of female. Table 1 shows that the majority of respondent (40.82%) were in the range of 31-40 years, 13% were younger than 30 years, 31.65% were older than 41 years and up to 50, 16.67% were older than 51 years. Most of them were educated to primary school, about 43.32% and around 21% of them were educated up to secondary school. About 5.83% of them passed from higher secondary school but around 30% of respondents were illiterate. Most of them lived in houses made by tin (76.63%), about 23.32% houses were semi Paka house. The average income was below Taka 1000/week (Figs. 2-5).

Table 1. Profile of the respondents

Characteristics	Numbers (N=120)	Percentage
Sex		
Male	67	55.83
Female	53	44.17
Age group		
20-30	13	10.83
31-40	49	40.82
41-50	38	31.65
50 <	20	16.67
Educational qualifications		
Illiterate	36	29.99
primary	52	43.32
Secondary	25	20.83
Higher secondary	7	5.83
House pattern		
Paka	0	0
Semipaka	28	23.32
Tin Shed	92	76.63
Kacha	0	0
Weekly Income		
<1000	65	54.15
1001-2000	44	36.65
2000-3000	11	9.16
3000<	0	0

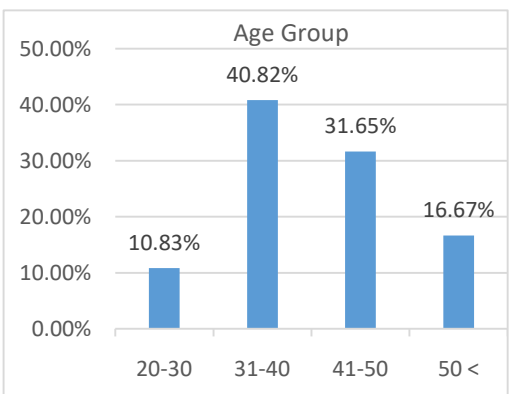

Fig. 2. Respondent's age

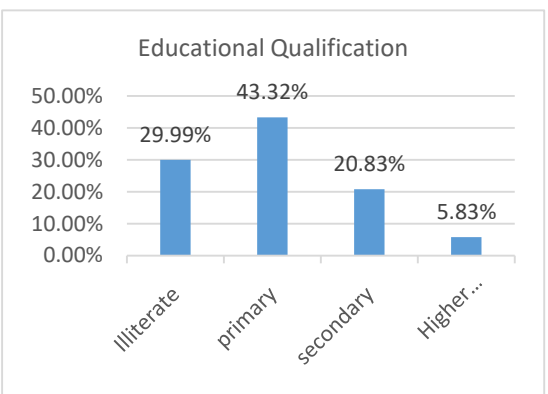

Fig. 3. Educational Qualification

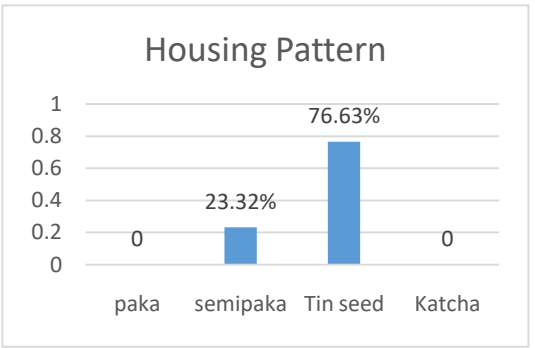

Fig. 4. Housing pattern

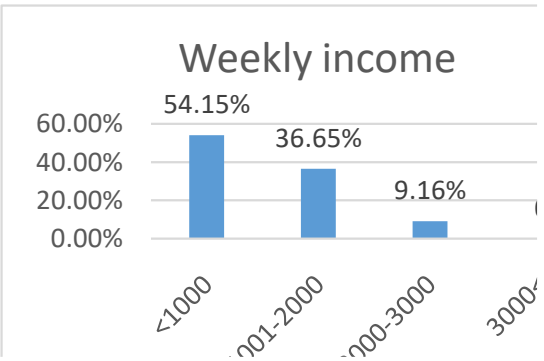

Fig. 5. Weekly income

Areas from migration: Among the 120 interviewees, the most people are come from Mymensingh district. Some people also came from Jamalpur, Netrokona and also from Nilphamari (Joldhaka), and Kurigram (Ulipur, Chilmari). There are also some people whose are belong to rural part of Rangpur district, Mahigongs, Kauniya, Burirhat and Mithapukur areas (Fig. 6).

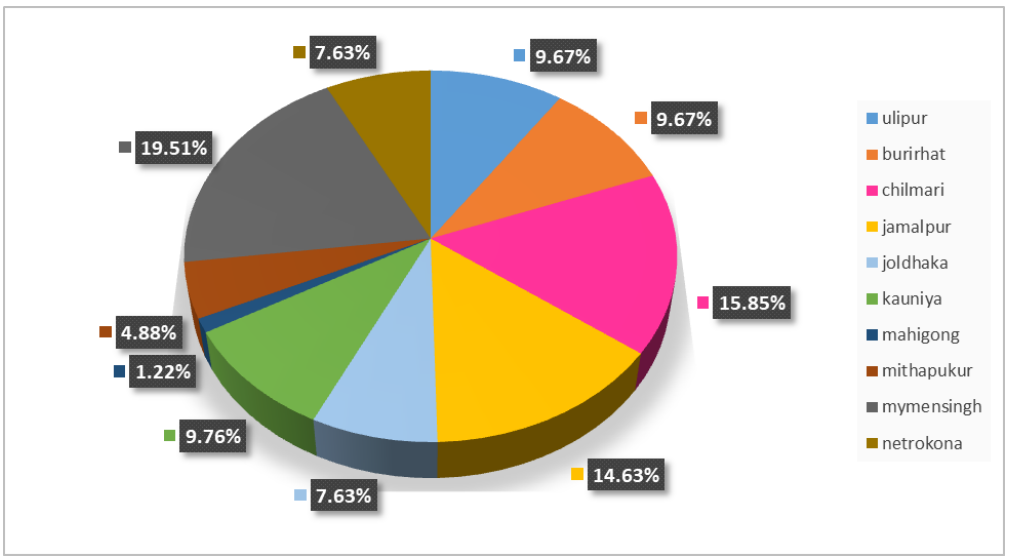

Fig 6. Percentage and areas of migrants

Among the migrants from the adjacent areas of Rangpur, there was almost 9.76% from Burirhat, 9.76% from Kauniya, 4.88% from Mithapukur and 1.22% from Mahigongs. There 9.76% respondents were from Ulipur and 15.85% Chilmari, Kurigram District. Among the respondents 7.32% come from Joldhaka, Nilphamari district. About 19.51% of the respondents came from Mymensingh. A percentage of 7.32% respondents were from Netrokona.

Classification of migrants according to the disasters: Figure 7 shows the classification of migrants. Most of the respondents (84.15%) left their own place due to riverbank erosion. About 13% respondents were victim of flood and got displaced and 2.44% were for drought.

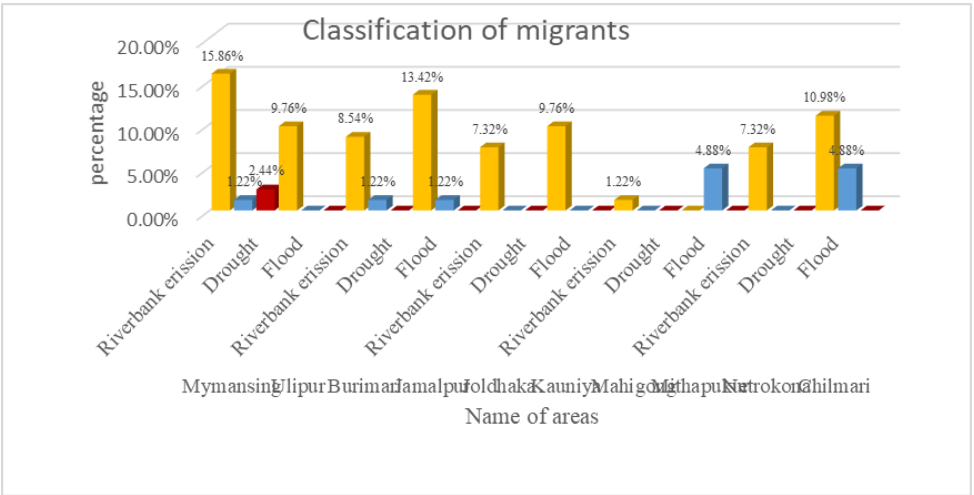

Fig.7. Classification of migrants

General Knowledge about Climate Change: This Fig. (Fig. 8) shows the knowledge about climate change of the respondents. Almost 26% respondent had knowledge about climate change and 74% were not familiar about climate change.

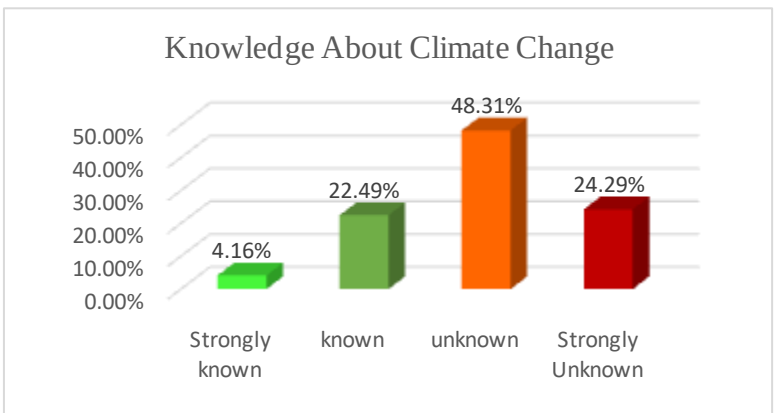

Fig.8. Knowledge about climate change

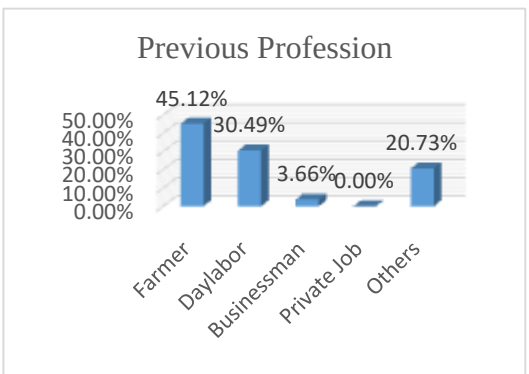

Fig. 9. Previous profession

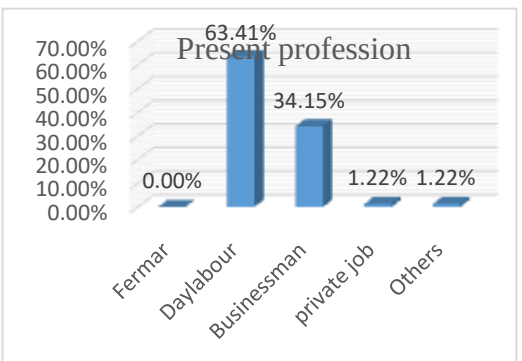

Fig. 10. Present profession

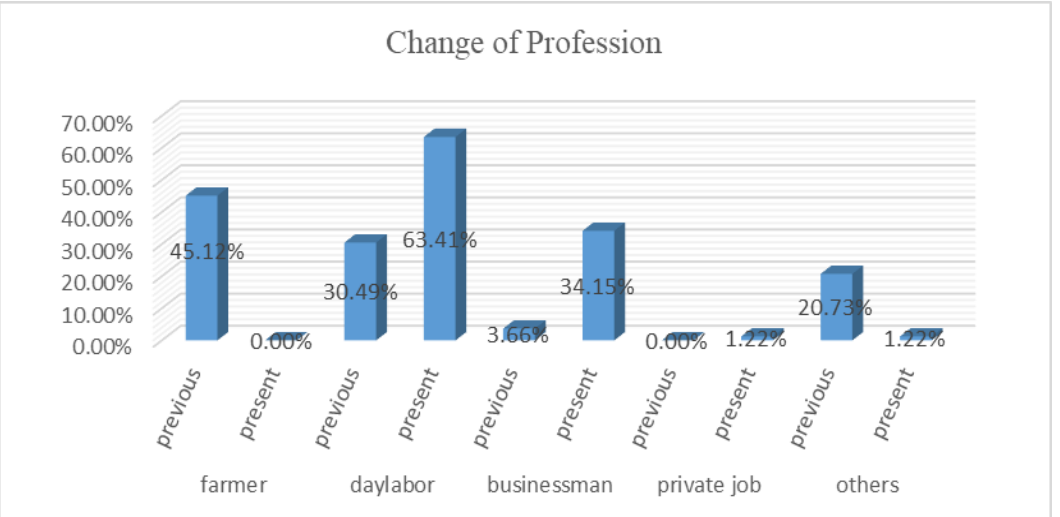

Fig. 11. Mode of Occupation Change

Mode of Occupation Change: The following graph shows the changes of the profession of the respondents. Previously about 45.12% were farmer and 30.49% people were day labor. On the other hand, about 63.41% were businessman but after migrating to the new place it came down to 34.15% (Figs. 9-11).

Case study: To gain in-depth knowledge, we selected people who migrated from their native place and conducted case study with them. He came to Rangpur from Burirhat; adjacent to Rangpur. He graduated from secondary school and was a businessman. He lost his land due to river bank erosion and migrated to Rangpur in search of job and better livelihood options. After facing many difficulties at last he got a job as a peon in an office. Now he is living a daily better life. Another respondent, named Prodip Chondro Ray, who also left his native village due to river bank erosion. He lived in Mymensingh. He was a farmer. He owned some crop land. After losing the land into river due to river bank landslide; he tried his best to cope up with the situation. But lastly left his village and came to Rangpur in search of livelihood. Now he is working as a day laborer and supporting his family while his wife working as a household helper.

Discussion

Bangladesh is situated in a region where extreme events occur due to its geographical location. Many studies have been done on the effect of climate change and resulting migration (Black *et al.* 2011; Kniveton *et al*. 2012; McLeman and Smith, 2006; Barnett and Webber, 2010; Adger *et al*., 2003a,b; Tacoli, 2011; Barnett and O'Neill, 2012). Our research focuses on the livelihood adaptation of climate migrants, who ended up in slums of Rangpur by getting affected of natural phenomena. This baseline study shows that hundred percent of the migrants were either forced or changed their previous profession after leaving their native village. Similar results have been found by the research done by McNamara *et al.* (2015) where people migrated into Dhaka city and established a slum called 'Bhola slum'. In our paper we have argued that climate migrants due to extreme events needed national and international intervention and support to adapt in a new place and also the help of getting new ways of earning which also a suggestion recommended by Adger *et al.* (2005). In order to comprehend how environmental stressors, affect migration, this research has developed a decision-making framework. This conceptual framework's ability to serve as a starting point for more in-depth and sophisticated explorations of how the environment influences migration trends is one of its most important features. The framework acknowledges the necessity to analyze both the capacity to cope with and recover from environmental events as well as the impact response to an event. As a result, it is necessary to combine the notions of vulnerability, adaptation, and resilience, and this is what the concept of livelihoods has endeavored to do. Surprisingly, there isn't

much information on the effects of migration on cities in Bangladesh in the extant climate migration research. But the practical instances of rural to urban migration and its effects on the cities demonstrate how precariously the climate migrants are residing in the cities and obstructing the implementation of good governance. Thus, this paper makes a significant contribution to our knowledge of the connection between climate-induced migration and urban effects.

Conclusion

To our knowledge, there is no document that details the precise number of migrants in each category who are affected by the environment or the climate in Bangladesh. Since it was unable to provide cause-specific narratives of migrants and their suffering in the cities, we must accept the limitations of the migration database. This research, however, serves as a baseline study to discuss and assess the significance of the impacts of migration to urban destinations, with a special focus on the acceptance of the existence of informal environmental migrants alongside mainstream urban people in urban landscape planning.

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