Environmental Migration from Coastal Area to Urban Centers: A Case Study of Mohammadpur Slums, Dhaka, Bangladesh

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Abstract: Migration due to climate change induced disasters has become one of the major challenges for Bangladesh. But the data related to environmental migrants are insufficient specially the aftermath of migration to a new area. This study was designed to assess the people's perceptions on coastal environmental hazards and the status of migrants after migration. The study was conducted on 100 households living in four slums of Mohammadpur area in Dhaka city with the help of questionnaire survey. 78% of the total respondents believe that coastal zone is more vulnerable than 10 years ago. 31.11% respondents thought frequent cyclone and 28.51% thought climate change as the major factors making the coastal zone more vulnerable over last 10 years. Excessive house rent (14.38%), inadequate supply of gas and electricity (14.22%) and water scarcity (13.08%) are the main problems of the slum people to where they have migrated. 33.64% respondents thought that governmental and non-governmental bodies should take initiatives to mitigate their problems.100% of the respondents chose Dhaka for the employment facility. Most of the respondents were from western coastal zone of Bangladesh. 61% of the respondents migrated during 2001-2010 showing a close relationship between increasing disaster and increase in the number of environmental migrants.

Keywords: Environmental Migration, Climate Change, Disaster, Coastal Zone

1. Introduction

Bangladesh because of its unique geographical characteristics and socio-economic condition is highly vulnerable to climate change impact. Hence, Bangladesh is one of the few countries where natural hazards are the main causes of migration [1]. It is assumed that in Bangladesh a large population displacement may occur in future due to climate change. Some estimates predict that by 2050 Bangladesh will have about 15 million environmental refugees [2].

Approximately 500,000 people were displaced when the Bhola Island was permanently inundated by floods in 2005. In addition, recent occurrences of major cyclones, like Sidr, 2007 and Aila, 2009, may be an indication of more frequent and severe climatic catastrophes. According to a research approximately 78 million people might be displaced by 2020 [3].

UNEP researcher Essam El-Hinnawi first defined environmental refugees as those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affect the quality of their life [4]. This problem is influencing the country's overall development. Most of the displaced people in the present case are living in the slums without minimum facilities of their basic needs. The actual situation of their lifestyle is still not known to most of the people. It is not like that all the people living in the slams are migrants but the actual numbers of the environmental refugees are still unidentified. Studies related to this field are very few in quantity and quality so an in-depth study on this issue is extremely needed. Under this backdrop, this study has been conducted with the objective to assess the people's perception regarding the prime causes of migration from the coastal zone as well as to find out the level of awareness about environmental migration among the slum people of Mohammadpur area in Dhaka city. The study also intended to

provide a scenario on the current living standard of the migrants living in the slum area.

Migration Factors and Bangladesh

Lee's laws divide factors causing migrations into two groups of factors: push and pull factors. Push factors are things that are negative about the area that one lives in, and pull factors are things that attract one to another area [5].

Satellite image and population studies have revealed a total loss of 0.6 percent of Bangladesh's land between 1982 and 1992, as well as about 730000 displaced people due to riverbank erosion [6]. Sea level rise will increase morphological activities in the river, inducing increased river flow. Accelerated river flow will increase river bank erosion too [7]. River erosion has taken a serious turn in Barisal, Patuakhali, Bhola, Barguna, Jhalkati and Pirojpur districts, and many families have become homeless. Some 30,000 houses, many commercial establishments, hundreds of educational institutions, and over thousands of hectares of cropland have been devoured by different rivers in the southern districts during last 10 years [8]. High food insecurity and low income results in the out migration of at least one household member (usually adult male) to find employment, leaving women and children to subsist [9]. According to the IPCC, 45 cm sea-level rise could cause a potential land loss of 10.9 percent and a one meter sea-level rise a loss of 20.7 percent [10]. UNDP predicts that, 11 percent of the costal population of Bangladesh will be directly threatened by a one meter sea-level rise [11]. Over the last 25 years, Bangladesh experienced six major floods exceeding usual flood levels and causing severe humanitarian and economic damage [12]. It can be summarized that, due to climate change induced disasters, Bangladesh is to lose a significant quantity of land in the coastal area which will lead to increase in the number of environmental migrants in the near future.

2. Methodology

In order to fulfill the objectives of the study both primary and secondary data were used. 4 slums at Mohammadpur located at the western part of the Dhaka city were considered as study area. The slums were, the Beribadh slum, Bashbari slum, Bosila road slum and Nobodoi housing slum. A reconnaissance survey found the study areas to be over populated with a low living standard. In the Beribadh slum, approximately 2000 houses comprise of around 8000 people. In Bosila road slum approximately 7500 people live in almost 1500 houses. Whereas at Bashbari slum 250 houses accommodate approximately 1250 people, while Nobodoi housing slum give shelter to around 1750 people in only 350 houses.

The following methodological approaches were performed for the completion of the research:

2.1. Primary Data Collection

In the primary data collection procedure both field survey and questionnaire survey were carried out. Field survey was conducted to observe the current living condition of the slum dwellers. Questionnaire survey was conducted on 100 households of which the numbers of surveyed households were 30, 30, 20, and 20 from Beribadh slum, Bashbari slum, Bosila road slum and Nobodoi housing slum respectively. It is to be noted that the respondents of the study areas were the environmental/climate refugees from the coastal Bangladesh. During the research, multiple answers were counted to reflect the people's perception on this issue. After the survey the results were converted into percentages to find out the ratio between the proportion of respondents and answers. The data were processed with the help of Microsoft Office Excel 2007 version.

2.2. Secondary Data Collection

The study secondary data were collected from various sources including published material from books and journals, internet, media sources and unpublished documents of government and non-governmental organizations as well. Secondary data were used to formulate a conceptual understanding and find out the previous works related to this field.

3. Results and Discussion

Coastal zone of Bangladesh is the most affected area due to the devastating natural events of changing climate. As a result the rural-urban migration rate remains high among the affected population of

3.1. People's Perception on the Environmental Hazards in the Coastal Areas

The coastal zone of Bangladesh is always vulnerable to the threat of cyclones and associated storm surges. As a consequence of climate change the frequency and magnitude of different coastal hazards like; cyclone, storm surge, coastal flood has increased a lot.
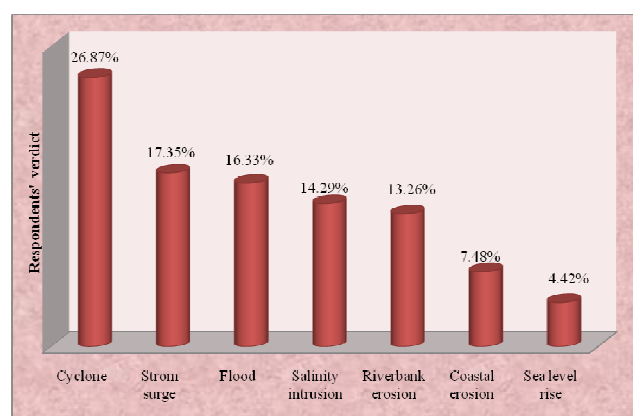

Figure 1. *Risk of Environmental Disasters in Coastal Area*

In the questionnaire survey, maximum respondents (26.87%) reported cyclone as the main environmental disaster risk in the coastal Bangladesh, while 17.35% thought of storm surge, 16.33% claimed flood, 14.29% salinity intrusion and 13.26% riverbank erosion (fig.1). However, a small

proportion of respondents talked about coastal erosion and sea level rise which was 7.48% and 4.42% respectively (fig.1) in this connection.

Table 1. *Root Cause of Coastal Zone Vulnerability Over 10 Years*

Factors responsible for coastal zone vulnerability over 10 years	Percentage of respondents (%)
Frequent Cyclone	31.11
Climate change	28.51
Deforestation	15.18
Salinity intrusion	14.44
Infrastructures pressure	5.19
Lack of management planning at national level	3.34
Anthropogenic activities	2.23

The highest proportion of the respondents thought frequent cyclone (31.11%) to be the prime cause of increasing vulnerability in the coastal zone over the past 10 years (Table 1), while 28.51% answered for climate change, 15.18% deforestation and 14.44% voted for salinity intrusion. Conversely, the lowest proportion of people thought anthropogenic activities as the cause of higher vulnerability of coastal zone at present time than to 10 years ago (Table 1). The study also found that 78% of the total respondents to claim the coastal zone to be more disaster prone than it was 10 years back.
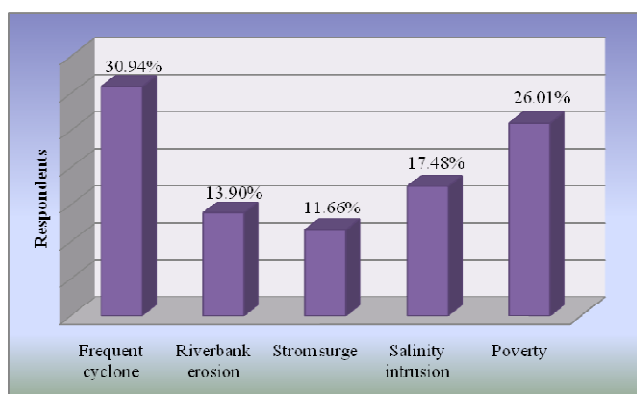

Figure 2. *Reasons for Migration*

The questionnaire survey revealed that most of the respondents were forced to leave their places of origin because of being disastrously affected by natural hazards, where majority of the respondents (30.94%) were claimed to be affected by cyclone hazards, followed by 11.66% affected by storm surges, 13.90% by riverbank erosion, and 17.48% by salinity intrusion (fig. 2). About 26% of the respondents had to leave due to poverty, apparently caused by climate induced disasters (fig. 2). Among the respondents, 61% of the total respondents had migrated in the year of 2001-2010, while 28% of the respondents migrated in the year of 1991-2000.

From the survey results noted above, it was understandable that due to the natural disasters people were migrating out from the coastal region. The results also suggested that highest number of people had migrated during the year 2001-2010, the time when the coastal zone of Bangladesh was hit by two disastrous cyclones i.e., SIDR and AILA. It can be said from the observations that natural disaster is one of the main causes of internal migration in Bangladesh in which rural-urban migration is more prominent. The study also revealed that, cyclone is the main environmental hazard which is causing most displacement from the coastal areas of Bangladesh.

3.2. Current Situation of the Slum Migrants

Among the respondents, about 21% were from Bhola, 17% from Patuakhali, 16% from Barguna, 11% from Bagerhat, 7% from Satkhira, 6% from Jhalakati, 6% from Faridpur, 3% from Pirojpur, 3% from Barisal, 2% from Khulna, 2% from Madaripur and 6% is from other coastal districts. It is also noteworthy that most of the respondents were from western coastal zone of Bangladesh.

Due to the low profile socio-economic status and educational background of the migrants from different coastal areas, they had no other choices than living in the urban low income settlements i.e. slum areas. In their present place of living, they face a transfer of their risks. High rent for accommodation is the major problem according to most of the slum dwellers (14.38%), followed by lacking of electricity and gas supply (14.22%), water scarcity (13.08%), lack of proper sanitation (11.95%), medical facilities (10.98%) and environmental pollution (7.75%), including social problems like congested dwellings (10.18%), lack of primary education facility (9.06%), problem of drug addiction (4.68%), increased marriage breakups (3.72%). Easy employment opportunity is the key facilities that are enjoyed by the slum dwellers (31.38%) after migrating to Dhaka city from their villages.

According to the study, differences between the occupational pattern of the male and female slum dwellers were very much significant. A high proportion of male were engaged as rickshaw pullers (35%) while most of the females (51%) were working as maid servants in nearby residential areas. Some, both males and females were involved in brick breaking or work as hawkers and shop keeps. Only 9% of the male respondents were involved with technical jobs with a zero percentage from the female respondents.

The study also revealed that, most of the slum dwellers wanted to return to their original places (48%) if they are assured with secure livelihood (BOX 1). Most of the

respondents (58%) had the knowledge of being environmental migrants and also 78% respondents thought that coastal zone is more vulnerable than 10 years ago (BOX 1).

48% respondents want to go back to their original place	58% respondent has idea about being environmental migrants	78% of the total respondents thought that, Coastal zone is more now disaster prone than 10 years ago
27% people want to stay at the slum area	27% respondents had no idea about being environmental migrants	22% has no idea about the coastal zone Vulnerability

BOX 1. People's Perception on Migration.

Table 2. Proposed Mitigation Measures By the Respondents.

Mitigation measures	Number of respondents (%)
Proper rehabilitation for environmental hazard victims	28.50
Easy bank loan for them	20.10
Work assurance for the affected people	17.76
Government and Nongovernmental help	33.64

In response to propose some mitigation measures for them, 33.64% respondents expected both governmental and non-governmental bodies to take initiatives to mitigate their problems (Table 2). In this regard, 28.50% opined for introducing housing facilities to the landless on a long-term basis, 20.10% wanted easy bank loan for the recovery of their livelihoods, while 17.76% would like to be satisfied with assurance of employment.

On the other hand, while 100% respondents felt that the slums were completely unsuitable for living, 44.32% respondents thought proper accommodations can be a big help for the slum dwellers, 32.33% voted for proper management of livelihood could be helpful to reduce various problems, 15.57% wanted easy access to their basic needs and 7.78% respondents thought more security may reduce many social problems.

From the study it can be said that, the people are living in a very challenging as well as unhealthy environment in the slum areas. Most of the migrants are ready to go back if they are provided with the livelihood security.

4. Conclusion

Bangladesh due to the extreme environmental events generated by the changing climate is facing the emerging problem of climate migrants. This is putting an extreme pressure on the limited resources in the cities. Rapid migration due to environmental disaster should be controlled by providing better rehabilitation arrangements. Employment opportunities should be made available in the disaster prone areas. Slum dwellers that are already migrated to urban areas should be given security from various types of social harassment that they tend to face. Overall disaster management policy should be implemented with high priority and strong monitoring.

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