Research Article

Socioeconomic and Environmental Conditions of Agricultural Migrants in Southwest Region of Bangladesh

Authors: Mosammat Rowshan Ara

Sociology Discipline, Khulna University, Khulna-9208, Bangladesh

E-mail: mraraku02@gmail.com

A B S T R A C T

This study aimed to identify the socioeconomic and environmental challenges of the migrants who are migrated in Krishnonagar and Mohammadnagar areas of Khulna district. By using simple random sampling technique 348 (157 from Krishnanagar and 191 from Mohammadnagar) household heads were selected as the respondents. The length of living was considered to assess the effect of migration on the socioeconomic and environmental conditions of the respondents. Seven indicators (income, occupation, education, class, family status, poverty situation and health) were considered to assess the socioeconomic conditions of the respondents. The regression analysis supports that the length of migration has its effect on income (71%), poverty situation (66%) and class position (64%) of the respondents. That means the socioeconomic conditions of the people living in the study areas for long time is better than those of new migrants. In this study environmental issues include water and air quality, housing conditions, waste disposal systems and related hazards affected by the respondents as the migrants. The respondents were migrated from different areas of Bangladesh mainly due to natural disaster and crop cultivation related vulnerability. Among the total respondents 87.4 percent of the household heads are male and 12.6 percent are female. The present study shows that nearly half of the respondents (47.7%) in the study area were found to be involved in seasonal work. The average monthly household income in the study areas was 5892 BDT and 55.2 percent respondents were absolutely poor. About 17 percent respondents claimed for the ownership of the house but 57.87 percent were living in rented house. Among the environmental challenges waterlogging and problem of solid waste disposal were severe. In this regard some useful points of recommendations for effective urban management and rural development activities are suggested.

INTRODUCTION

Today there is growing international attention to the phenomenon of migration, its causes, its effects and the way in which it occurs (FAO, 2017). Internal migration has become both a major policy concern and a subject of a heated public debate in Bangladesh. It has also been identified as the cause of severe urban deprivation and a destroyer of traditional rural life (UNDP, 2009). Bangladesh is estimated to be the third most vulnerable country in terms of population exposed to sea level rise (Pender, 2008). Coastal Bangladesh is also a hub of hydro-meteorological disasters including cyclones, tidal surges, floods, drought, saline water intrusion, waterlogging, and land subsidence. Members of many coastal communities, whose livelihoods depend on farming or fisheries especially on shrimp cultivation, choose to move to urban and peri-urban and other rural areas due to loss or damage of land. Farms have been inundated with salt water, damaging crops and reducing yield. River erosion from flooding claims 20,000 acres of land and leaves up to 200,000 people homeless each year. Indeed only around half of the population has access to land, and the land is concentrated in the hands of a small proportion of people. Powerful landlords employ the landless as agriculture laborers. Every year, thousands of destitute victims of natural disasters pour into the cities from rural areas (Ismail, 2016). Others come in the hope of a better life whenever the population rise to such an extent that people can no longer secure a livelihood, they migrated elsewhere. Most of the discussions on population movement in the development literature have centered on rural to urban migration. Rural to rural migration has received very little attention. Yet rural to rural migration has consistently been large volume (Bhattacharya, 2000).

In Bangladesh agriculture sector contributes about 17 percent to the country`s Gross Domestic Product (GDP) and employs more than 45 percent of total labour force (BBS, 2015). Agriculture has played a key role in reducing Bangladesh's poverty from 48.9% in 2000 to 31.5% by 2010 with over 87% of rural people as part of their income from agricultural activities (WB, 2016). Although agricultural labor productivity has increased in Bangladesh, it is not so much due to an increase of agricultural value added, as it is due to a decrease of the agricultural labour force, associated with accelerating migration in urban centre and besides the cities. The main reasons for the weak agricultural development are exogenous factors, notably climate-change induced natural hazards. Natural hazards destroy harvests and threaten food security, especially of poor households (Herrmann and Svarin, 2009). Many farmers have been pushed to migrate out of their communities due to climate change-induced pressures such as more frequent extreme weather events, rising sea levels, soil salinity due to shrimp cultivation and flooding. While research over the years has focused on migration as a challenge to be addressed, more recent research has focused on migration as a form of adaptation. Major cities in Bangladesh present an elastic peri-urban zone, a concentric spatial ring marked by poverty, slums, industrialization, environmental degradations, speculation, land-grabbing, and administrative emptiness (Farhana et al., 2012). Thus internal migration within Bangladesh requires more attention, with many migrants facing challenges due to the lack of services, resources and employment opportunities.

Those moving from one area to other settings require a different set of skills to find employment and living costs. Most of these people contribute to the informal sector, yet their role in economy and rights are overlooked by the formal sectors. Increased rural to urban and peri-urban migration has placed significant pressures on urban food and water resources (Ismail, 2016). The socioeconomic and environmental constraints faced by migrants are many - lack of formal residency rights; lack of identity proof; lack of political representation; inadequate housing; low-paid, insecure or hazardous work; extreme vulnerability of women and children to trafficking and sex exploitation; exclusion from state-provided services such as health and education and discrimination based on ethnicity, religion, class or gender (UNESCO, 2013). Migrants face difficulties in accessing housing and other basic amenities such as water and sanitation. Since migrants mostly have only traditional knowledge on agriculture, they want to involve in agricultural activities in the areas very close to city with large land.

Sea level rise is a growing threat to the coastal region while Khulna is one of the 15 most vulnerable cities of the world (Susmita et al., 2009). Future climate projections indicate that the increasing rate of sea level rise caused by global warming would lead to permanent inundation, drainage congestion, salinity intrusion and frequent storm surge inundation in the southwestern coastal region including Khulna. As the Global Risks Perception Survey (WEF, 2015) highlights that three of the top 10 risks in terms of impact over the next 10 years are environmental risks: water crises, at the top of the table, and failure of climate-change adaptation as well as biodiversity loss. Since migrants mostly have restricted access to education, they remain unaware of their legal rights and are unable to access an impartial forum to register their grievances. Internal migration can expand people's freedoms and capabilities, and make substantial contributions to human development in terms of improved incomes, education and health (UNDP, 2009). To ensure a good quality of life of the migrants the socioeconomic and the environmental conditions within which a dweller is living is of utmost importance. Thus the study aimed to understand the socioeconomic and environmental status of the migrant farmers living in Krishnanagar and Mohammadnagar under Khulna Metropolitan areas. Specifically the objective of this study was to know the status of income, employment, education, health, poverty situation, class position of the respondents and to present the conditions of water, air, sanitation, housing facilities and waste disposal system in the study areas.

METHODOLOGY

Research Design: The study was designed to study the socioeconomic and environmental status of the migrant farmers. In this study survey method has been used for data collection. By using simple random sampling technique the respondents were selected from the household head among the migrants those who were farmers in their place of origin. The unit of analysis of this study is the head of the household who is not the resident of that area by born. To prepare the list of migrants a census was conducted in January, 2015. A list of 696 migrants was prepared.

Locale of the study: The study was conducted in purposively selected two villages namely Krishnanagar and Mohammadnagar of Jalma union of Batiaghata upazila under Khulna Metropilitan area.

Population and Sampling: The listed 696 migrants of the two villages were treated as the population of this study. Fifty percent of the population was selected as sample for the study following proportionate and simple random sampling method. Thus the sample size stood 348 (157 from Krishnanagar and 191 from Mohammadnagar).

Following Brown (2009) the respondents were classified into three classes (i) upper class (composed of those who are rich, well-born, powerful, or a combination of those) (ii) middle class (particularly in relation to the necessity of an educated work force in technological economies and (iii) Lower class (occasionally described as working class) are those employed in low-paying wage jobs with very little economic security. Data were collected from two sources: primary source i.e. the field survey and secondary source i.e. through systematic study of available records. The primary data were collected through personal interview using an interview schedule. Data were collected during March to December 2015.

Operational definition of socioeconomic and environmental conditions: Socioeconomic conditions are poverty, business cycle conditions, demographics, criminal justice system actions, and family structure (Allen, 1996). The study identified the socioeconomic dimensions that are most relevant to better understanding the situation of migrants (e.g. age, sex, education, class, income, employment, poverty situation and health) and their related problems. Environmental issues are related to human activity on the biophysical environment (Eccleston and March, 2010). In this context the study considers environmental issues as water, air, sanitation, housing facilities, and waste disposal system in the study areas.

International Organization for Migration (IOM, 2011) defines a migrant as any person who is moving or has moved across an international border or within a state away from his/her habitual place of residence, regardless of (1) the person's legal status; (2) whether the movement is voluntary or involuntary; (3) what the causes for the movement are; or (4) what the length of the stay is? How migrant groups are defined and measured is strongly related to the historical and political context. In this study following Al Amin (2011) the place of birth was considered in defining the migrants. In this regard the respondents are considered as migrant who were involved in agricultural activities in their place of origin.

To measure the poverty situation of the respondents the study considers income as the measuring tool. In 2015, the World Bank (WB) defines extreme poverty as living on less than US$1.90 per day, and moderate poverty as less than $2 or $5 a day. During the field survey from March, 2015 to December, 2015 the conversion rate of US$ 1 was equivalent to almost 79 taka (Bangladeshi currency). So the respondents' whose monthly income is not more than 5,000 BDT was considered as hardcore or absolutely poor and the household heads whose monthly income is not more than 1,0000 BDT were selected as moderately poor.

For processing and analysis of data, SPSS was used. Collected data were interpreted by descriptive statistics as mean, mode, standard deviation and inferential statistics like Regression analysis, F-test, Chi-square test, Pearson's 'R' and Fisher's exact test.

RESULTS AND DISCUSSION

As a metropolitan city Khulna is source of employment. It also offers the better health and educational facilities in the country. Moreover many industries of the country are also located in the city. With these opportunities a large number of people come to Khulna to earn for their livings. Migrants in Khulna predominantly come from the Southern and Southwestern parts of the country. Barisal, Satkhira and Khulna are the top three districts from where most of the migrants (82.11%) come. Land degradation and Shrimp cultivation victims from Bagerhat, patuakhali and Pirojpur, Aila and Sidr affected people from Barisal and Satkhira are coming to Khulna to earn for their livings. As the respondents were farmers, many of them are interested to be settled and to involve in cultivation with large amount of land near the city. Krishnanagar and Mohammadnagar are located within 5 kilometer beside Khulna city. In this context and to understand the socioeconomic and environmental problems of the migrant farmers Krishnanagar and Mohammadnagar were selected as the study areas. In terms of cultural and geographical background the study areas have similarities. The areas are mostly by the side of Mayur River and beside the Khulna-Bagerhat road and is almost no difference regarding their culture. As the areas are very close to the city the places are so suitable for hunting job opportunities.

Socioeconomic and Demographic Status of the Respondents: This section focuses on the analysis part comprising of socioeconomic status and health of the migrated farmer living in the study areas. In this regard some variables encompasses age, education, employment, income, expenditure and housing have been carefully considered which would reflect the real pictures of the living areas. A remarkable percentage of the respondents belonged to 19-35 and 36-50 age groups with a gradual decrease after the age of 50 (Table 1). Among the total respondents 87.4 percent of the household heads are male and 12.6 percent are female. In the study area highest proportion (77.01%) of the respondents belonged to nuclear family. It is also observed that 60 percent family consists of 2 to 3 dependent members. Level of education of the respondents was measured by access to five types of educational level. Table 1 shows that (40.1%) two-fifths of the respondents could only sign, 44.3% have completed junior secondary level and more than 2.6% respondents have passed SSC. From the Table 1 it is found that 59.8% respondents migrated but not for more than 5 years and 10.6% respondents were living in the study area for 11 to 15 years whereas 6.6% were living in the study areas for 16 and above years.

The respondents were categorized into three classes (Brown, 2009) on the basis of social status (usually income was considered to assess social status). Most (90.5%) of the respondents were lower class people (earn 0-8,000 BDT), and only 3.4% were in upper class. The average monthly household income of the respondents was 5891.67 BDT. The present study shows that 44.54% respondents in the study area were found to be employed on temporary basis and 47.70% respondents were seasonal workers. A few (7.76%) of them had no work at all. It is also observed that 16.09% respondents were the owner of their house and 57.87% respondents live in rented houses.

The Table 1 shows that 32.8% respondents have no land at all whereas 32.2% respondents have 5 to 7 decimal land and only few (5.1%) were the owner of land of 8 decimal and above. Among the respondents 55.2% were absolutely poor and 6.6% were not poor at all.

Occupational status of the respondents: Table 2 indicates that before migration all the respondents were involved in agricultural activities such as crop cultivation, aquaculture, livestock and agroforestry. Among them 71 respondents were mainly involved in paddy cultivation and 139 were in aquaculture, especially shrimp cultivation. But after migration only 80 respondents were involved in agricultural activities (mostly vegetable cultivation, and livestock rearing), 38 were involved in industrial job (mainly rice mill and wood industry), rickshaw pulling (99) and small scale business (16). From the Table 2 it is observed that before migration 71 respondents were mainly involved in crop cultivation among them highest number (21) were involved in agriculture after migration followed by day labor (19), rickshaw pulling (13) and other temporary services (06).

The length of migration has its effect on the occupation. Those who are living at that area for long time were able to involve more in agriculture (35.00%) but those who are new migrants are involved more in rickshaw pulling (30.55%) (Table 3). In most cases the reason is that they are not familiar with the environment and they are facing the problems with social and economic assimilation (problem in finding job, new friends and community support). This condition is also applicable in case of family income.

From the Table 4 it is found that those who are living for long years at that area are able to earn more than the migrant who are living there for not more than 10 years. The Chi-square test at 4 degree of freedom and Fisher's exact test also support that.

Table 5 presents one to one regression analysis. The regression analysis indicates that the length of migration has its effect on income (71%), land (26%) poverty situation (66%) and class position (64%) of the respondents.

Health Status of the Respondents: According to the Constitution of the People's Republic of Bangladesh, (MoLJPA, 1972), the Government of Bangladesh (GOB) is responsible for securing healthcare to its citizens. Bangladesh has made remarkable progress in recent decades to improve the health status of its people. To sustain these achievements and address challenges like high levels of neonatal mortality, emerging and re-emerging communicable diseases and a rising trend in non-communicable diseases, the Government is guided by the Health, Population and Nutrition Sector Development Programme (HPNSDP) 2011–2016 (WHO, 2014).

In the study area regarding distance from source of medical facility the situation is mostly satisfied. During child birth, majority (67.74%) of the respondents are supported by the traditional attendants but a few (7.76%) of them used to go to the professional doctors. More than 36.8 percent respondents were experienced with one still birth in last 12 years and about one third (33.0%) of the respondents having 1 underweight baby.

Causes of Migration: In Bangladesh, southern coastal zones are frequently exposed to heavy monsoon rains and cyclones. In addition, there have man-made disasters like arsenic, water logging and salinity in water and soil. Highest proportion of the respondents (45.9%) of the study area migrated due to natural disaster from surrounding areas mostly from Barishal, Satkhira, Koyra and Paikgasa. The farmers who migrated for searching job are also victim of fragmentation of land due to shrimp cultivation, soil degradation and much other unequal distribution of agricultural resources.

A few (12.6%) migrated due to negative impact of shrimp cultivation. Among the respondents, 7.7 percent respondents migrated after their marriage (Figure 3).

The Environmental Challenge: The quality of locality's infrastructure – its housing, roads, drinking water, sanitation, waste management, telecommunications, hospitals, schools and so forth largely determines its residents' quality of life, social inclusion and economic opportunities (WEF, 2014).

The poor, living in inadequate over crowded shelters, suffer from diseases and injuries resulting from proximity to toxic and hazardous wastes; lack of clean water and sanitation; water, air and noise pollution (Sattertshwaite, 1997). They are particularly vulnerable to typhoid, diarrhoeal diseases, cholera and intestinal worms from contaminated water and food, as well as diseases associated with poor drainage and garbage collection (SDSN, 2013). The major environmental challenges in the study area are discussed below:

Types of House: BBS (2011) identified four types of house (*Pucca,* Semi-*pucca, Kutcha* and *Jhupri*). Khulna metropolitan area consists of Khulna City Corporation and its adjoining areas including municipality, cantonments and sub-urban areas. Tin-shed is a structure of normal height and its roof is made of corrugated/plain tin sheets but it does not have wall, made of bricks. *Jhupri* has a ceiling of less than 4 feet high and is made of very cheap construction material like straw, bamboo, grass, leaves, polythene sheets, gunny bags etc. In the study area 8.6% of the respondents live in Jhupri type of house, while 48.28% live in *Kutcha* houses and about a quarter (20.69%) live in *Pucca* houses. In terms of construction materials, it was observed that the housing situation in Mohammadnagar is more appealing than Krishnanagar (Table 7).

In the study area 72.41% people dwell in a single room, only 24.68% household's heads live in house with more than one room but 2.91% not have any room at all. Regarding room space it is found that 52.3% houses are of 11-12 square feet and only 3.4% are living in house of more than 14 square feet. More than 89% of the respondents have reported that they use single *chula* outside their house (Table 7).

In the study area water logging, caused by heavy rainfall, is the primary hazard which was reported by 86.50% respondents whereas 3.16% household are always inundated. About one-tenth (10.34%) of the respondents reported that their houses were flood free. The respondents of the study area reported that it takes several days for the water to drain and during this time economic hardship is observed for those who rely on occasional work such as street vendors, rickshaw drivers, and day laborers. This stagnant water causes severe problems in sending children to school and for the collection of clean drinking water. Moreover contamination of water leading to waterborne diseases (Table 7).

Potable Water: In highest number of cases (46.07 and 42.04%) shallow tube wells provide drinking water in the study area. Those who are interviewed noted that drinking water was sufficient 10-15 years ago but now the water is saline and is no longer potable.

In addition the water table has dropped by approximately 100-300 feet during the last 14 years and therefore in the dry season the wells are dried. The respondents in the study area reported that during dry season the poorest people have no choice but to drink unsafe saline water.

In Mohammadnagar area, 39.27% of households depend on deep tube well, which is mostly installed by the community people. About 42% in Krishnanager rely on shallow tube well while 23.57% preserve the rain water and use it as drinking water.

Sanitation Facilities: Khulna is one of the fast growing commercial cities in Bangladesh with a population of 1.9 million which produce about 450 ton of municipal solid wastes per day. Khulna City Corporation and community based NGOs are taking care of only 42% of the total waste generated while the rest of them are unattended. In fact, most of the wastes are collected from door-to-door without any sorting and either dumped in open space or improperly landfilled which is likely to contaminate the air and ground water (Ahsan et al., 2009). It also creates another severe problem in the locations situated beside the city especially in the study areas.

Most (92.24%) of the respondents told that their households are devoid of any waste disposal system. A few (13.51%) households had access to municipal services and 42.81% respondents throw liquid waste on open ground. Due to the dumping of waste into drains, lack of maintenance and irregular or no cleaning, drains have become breeding grounds for mosquitoes. Dumping waste in ponds and canals (locally known as Kader's canal) disrupts the normal water flow and causing flooding and overflowing during rainy season, inundating roads and low lying areas causing havoc and environmental hazards for the dwellers. The bad smell from the dumping solid waste is a major problem as claimed by the respondents. The overall sanitation condition in the study area shows a gloomy picture as demonstrated by data in Table 9. More than 47% of the respondents have experience with dirty surroundings. Only 10.63% of the respondents have the access to improved drainage, toilet and clean surroundings. There are specific government organizations (GOs) and NGOs in Khulna implementing some sanitation status improvement projects in the poor areas since 1985 (Roy, 2012).

Thus the socioeconomic and environmental status of the migrated farmers are not satisfactory at all. Many constraints are significant in the study areas. In this regard the sustainable livelihood of the migrated farmers notes a variety of areas of concern. For example, land and land tenure are the key constraint, and policy should strengthen the land rights of the poor (Mitlin, 2001). In addition there is a need to facilitate access to infrastructure and basic services such as, establishment of schools especially in Krishnanagar, sanitation, solid waste collection, electricity, road improvements health care centers in both of the areas.
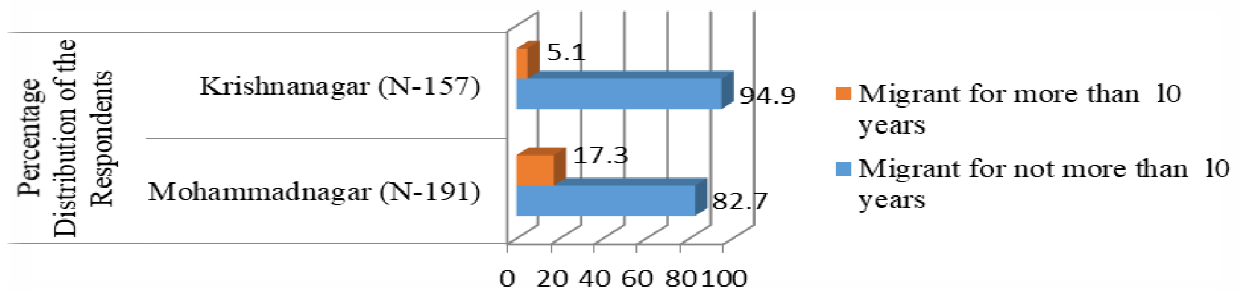
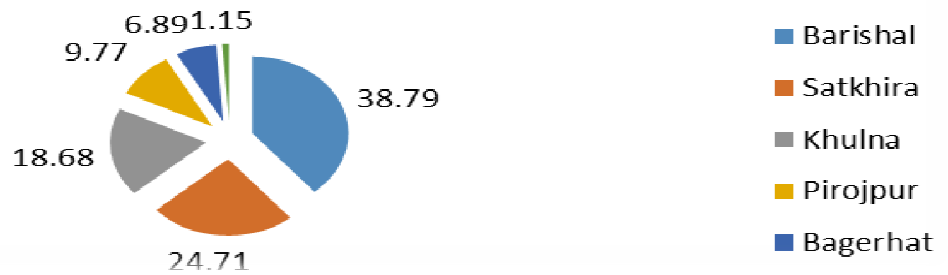**Figure 1. Location wise distribution of the Respondents with length of migration**

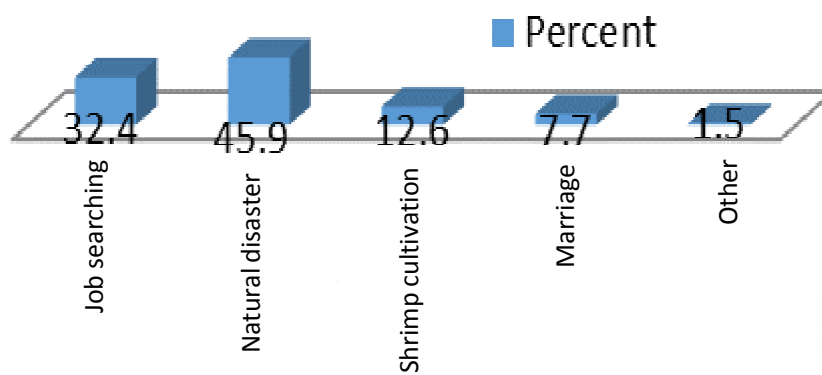**Figure 2. Place of origin of the migrated people**

Figure 3. Causes for leaving the origin

Table 1. Socioeconomic and demographic status of the respondents (N-348)

Parameters	Categories	Value	Respondents (Number and Percentage)	Mean. SD Min. Max.
Age (in Year)	Young	Up to 35 years	189(54.3)	Min.19.Max.80
	Medium aged	36-50 years	88(25.3)	Mean-39 Mode-34
	Old	>50 years	71(20.4)	SD.13.54
Sex	Male	-	304(87.4)	
	Female		44(12.6)	
Types of family	Nuclear		268(77.01)	
	Extended		80(22.99)	
No. of dependent members	-	0-1	74(21.3)	
		2-3	209(60.0)	
		4-5	62(17.8)	
		6 and above	3(0.9)	
Educational status	Only can sign	0	140(40.1)	-
	Primary	i-v	154(44.3)	
	Junior secondary	vi-viii	40(11.6)	
	Secondary	ix-x	9(2.6)	
	Higher secondary and above	>x	5(1.5)	
Length of migration (in year)	-	0-5	208(59.8)	Max.44, Min.0.5
		6-10	80(23.0)	
		11-15	37(10.6)	
		16 and above	23(6.6)	
Social class (usually on the basis of income)	Lower class	0-8,000	315(90.5)	-
	Middle class	8,001-16,000	21(6.1)	
	Upper class	>16,000	12(3.4)	
Monthly household income (BDT)	-	Up to 5,000	192(55.2)	Mean- 5891.67
		5,001-10,000	133(38.2)	
		10,001-15,000	9(2.6)	
		15,001-20,000	9(2.6)	
		>20,000	5(1.4)	
Working condition	-	Temporary	155(44.54)	-
		Seasonal	166(47.70)	
		No work/sometimes	27(7.76)	
Ownership of house	Rented	-	201 (57.87)	-
	Owner		56 (16.09)	
	Gifted		91(26.04)	
Amount of Land (in Decimal)	-	0	114(32.8)	-
		1-4	104(29.9)	
		5-7	112(32.2)	
		8 and above	18(5.1)	
Poverty Situation	Absolutely poor	0-5,000	192(55.2)	-
	Moderately poor	5,001-10,000	133(38.2)	
	Non poor	>10,000	23(6.6)	

Table 2. Occupational status of the respondents

Main occupation before migration	Main occupation after migration (N=348)							
	Rickshaw pulling	Day labor	Business	Agriculture	Unemployed	Industrial work	Service	Total
Crop Agriculture	13	19	4	21	3	5	6	71
Aquaculture	50	31	5	28	8	13	4	139
Livestock	22	15	4	20	1	7	7	76
Agroforestry	14	09	3	11	2	13	10	62
Total	99	74	16	80	14	38	27	348

Table 3. Length of Migration and Occupation of the Respondents (Cross tabulation)

Migration length	Occupation (Number and Percentage of the Respondents)							Total
	Agriculture	Rickshaw pulling	Day labor	Business	Service	Unemployed	Industrial work	
Migrated for not more than 10 years	59 (20.49)	88 (30.55)	60 (20.83)	13 (4.51)	24 (8.33)	13 (4.51)	31 (10.76)	288
Living for more than 10 years	21 (35.00)	11 (18.33)	14 (23.331)	3 (5.00)	3 (5.00)	1 (1.67)	7 (11.67)	60
Total	80 (22.99)	99 (28.45)	74 (21.3)	16 (4.60)	27 (7.76)	14 (4.02)	38 (10.92)	348

Table 4. Length of Migration and Family Income of the Respondents (Cross tabulation)

Migration length	Income- BDT (Number and percentage of the Respondents)					Total
	0-5,000	5,001-10,000	10,001-15,000	15,001-20,000	20,000 and above	
Living for below 10 years	187 (64.93)	97 (33.68)	2 (0.69)	1 (0.35)	1 (0.35)	288
Living for more than 10 years	5 (8.33)	36 (60.00)	7 (11.67)	8 (13.33)	4 (6.67)	60
Total	192 (55.17)	133 (38.23)	9 (2.59)	9 (2.59)	5 (1.44)	348

Chi-square value-1118.166 Asymp. Sig. (2-sided) 0.000.df-4, Fishers' Exact test-110.319

Table 5. Result of Linear Regression

Model Summery			
Dependent Variable	Standardized Coefficients	R Square	ANOVA[a] F (Significance level)
Family Income	0.714	0.510	359.705 (0.000[b])
Amount of Land	0.260	0.068	25.049 (0.000)
Poverty Situation	0.660	0.436	267.449 (0.000)
Social Class	0.640	0.410	240.204 (0.000)

For F-test- a. Dependent variables. b. Predictors: (Constant), Duration of Migration

Table 6. Medical facilities in the study area

Tools	Percentage distribution of the respondents			
Distance from Source of medical facility (in k.m.)	1 (15.52)	2 (22.41)	3 (25.51)	4 (36.49)
Child birth with attendants	No attendant (16.7)	Traditional attendant (67.74)	Urban Primary Health Care centre (6.90)	With high professional doctor (7.76)
Number of still births in last 12 years	0 (54.9)	1 (36.8)	2 (8.3)	
No. of underweight babies	0 (51.1)	1 (33.0)	2 (15.8)	
Diseases prevention system for family members	Yes (3.0)	No (97.0)		
Fast Aid facility for family members	Yes (5.2)	No (94.8)		

Table 7. Housing condition of the migrants

Tools	Percentage distribution of the respondents			
Types of house	Jhupri (8.6)	Kutcha (48.28)	Semi- pucca (22.41)	Pucca (20.69)
No. of rooms in the house	0 (2.91)	1 (72.41)	2 and above (24.68)	
Area of room square feet) Mean: 11.21	9-10 (30.7)	11-12 (52.3)	13-14 (13.5)	15 and above (3.4)
Place of kitchen	Inside (10.35)	Outside (single) chula (89.65)		
Place of toilet	Inside (2.5)	Outside (98.5)		
Water Logged Area of House	Water logged during rainy season (86.50)	Always flooded (3.16)	Flood free (10.34)	

Table 8. Common sources of water in the study area

Water sources	Mohammadnagar	Krishnanagar
Natural source (usually rain water)	14.66	23.57
Tube well	46.07	42.04
Deep Tube well	39.27	34.39
Total	100.00	100.00

Table 9. Solid and liquid waste disposal system

Place and quality of waste disposal	Percentage distribution of the respondents regarding waste disposal system				
Disposal system	Regular (7.76)	No system (92.24)	-	-	- -
Quality of solid waste disposal system	House (13.51)	Canal (7.18)	Open space (62.94)	River (16.37)	
Liquid waste storage place	Canal (9.20)	Open ground (42.81)	Drain (20.69)	Pond (16.67) River (10.63)	
Quality of sewerage system	Good (9.48)	Medium (16.38)	Low (23.56)	No system (50.58)	
Sanitation status	Very low with dirty surroundings (21.84)	Low with no drainage facility (25.29)	Moderate with no sufficient air and water quality (42.24)	Good with sanitary toilet and sufficient water and air (10.63)	

CONCLUSION

As a densely populated, coastal zone, Khulna district faces significant challenges in adapting to the impacts of climate change, particularly in the areas of job and food security. Results of the household surveys conducted in two areas of Khulna shows that the communities are almost homogenous by socioeconomic condition, housing and environmental health standards. Some dissimilarities are also visible across water sources and housing quality. However, low level of income, inadequate sanitation services, substandard housing and the crammed environment in the area impacted on the environment and the livelihood pattern like job, income and social status of the respondents. Therefore migration needs to be used as an adaptation strategy that ensures food and water security in those areas. Hence, massive investments in infrastructural development such as drainage system, sanitation, water supply and especially housing need to be

done. By establishing links with government and non-governmental stakeholders such as the Department of Agriculture, industrial training institutes, manufactures and exporters association, builders association, poultry farms, hotel management colleges and existing government livelihood and training programmes, need to be provided for the migrants with skill certification. Government, civil society and the private sector are ideally positioned to plan rapid urbanization and must act to Khulna in metropolitan growth. In order to prevent further internal migration and the loss of labor force in agriculture, Bangladesh needs to increase agricultural productivity so that it can provide better employment and higher wage opportunities. Improving education levels and skills of workers could have huge benefits in increasing access to credit.

REFERENCES

Ahsan, R, Islam, A.K.M. K., Shams, S. 2009. Municipal Waste Management Mechanism for Khulna City: A Practice for Better Environment. Proceedings of the International Conference on Solid Waste Management. Technical, Environmental and Socio-economical Contexts – Waste Safe (2009). 9 to 10 November 2009, Khulna, Bangladesh pp.101-108.

Allen, R.C. 1996. Socioeconomic Conditions and Property Crime: A Comprehensive Review and Test of the Professional Literature. The American Journal of Economics and Sociology, 55(3): 293-308.

Al Amin, M.M. 2011. Factors behind Internal Migration and Migrant's Livelihood Aspects: Dhaka City, Bangladesh. Master Thesis, School of Economics and Management, Lund University, Lund, Sweden, p7.

BBS. 2011. Population and Housing Census, Vol. 1. Bangladesh Bureau of Statistics (BBS), Ministry of Planning, Dhaka, Bangladesh. p. 12.

BBS. 2015. Yearbook of Agricultural Statistics. Bangladesh Bureau of Statistics (BBS), Ministry of Planning, Dhaka, Bangladesh. p. 3.

Bhattacharya, P.C. 2000. An Analysis of Rural Migration in India. Journal of International Development, 12(5): 655-667.

Brown, D.F. 2009. Social Class and Status. Concise Encyclopedia of Pragmatics. Elsevier. p. 953.

Eccleston, C.H. and March, F. 2010. Global Environmental Policy: Concepts, Principles, and Practice. CRC Press, Florida.

FAO. 2017. Rural migration, agriculture and rural development. Global Forum on Food Security and Nutrition. Food and Agricultural Organization of the United Nations. FSN Forum.

Farhana, K.M., Rahman, S.A. and Rahman, M. 2012. Factors of Migration in Urban Bangladesh: An Empirical Study of Poor Migrants in Rajshahi City. Bangladesh e-Journal of Sociology, Volume 9: 105-117.

Herrmann, M. and Svarin, D. 2009. Environmental pressures and rural-urban migration: the case of Bangladesh. United Nations Conference on Trade and Development (UNCTAD), MPRA Paper No. 12879, Geneva, Switzerland. pp 2-17.

IOM. 2011. Glossary on Migration. International Organization of Migration (IOM), Switzerland, Available at https://www.iom.int/key-migration-terms

Ismail, H. 2016. Climate change, food and water security in Bangladesh. Future Directions International (FDI), Dalkeith, Australia. pp. 1-3.

Mitlin, D. 2001. Civil Society and Urban Poverty: Examining Complexity Environment and Urbanization. Environment and Urbanization, 13(2): 151-173.

MoLJPA. 1972. The Constitution of the People's Republic of Bangladesh. Constitution of Bangladesh (CoB), Ministry of Law, Justice and Parliamentary Affairs (MoLJPA), Dhaka, Bangladesh. 18 (1).

Pender, J.S. 2008. What is climate change? And how it will effect Bangladesh. Church of Bangladesh Social Development Programme, Briefing Paper, Dhaka, Bangladesh. pp. 6-10.

Roy, T.K. 2012. Sustainability Options of Sanitation Projects in the Slums of Khulna City. Proceedings of the 1st International Conference on Civil Engineering for Sustainable Development (ICCESD-2012), KUET, Khulna, Bangladesh.pp. 4-6.

Satterthwaite, D. 1997. Urban poverty: reconsidering its scale and nature. IDS Bulletin, 28(2): 9–23.

SDSN. 2013. The urban opportunity: enabling transformative and sustainable development. Sustainable Development Solution Network (SDSN), New York, United States. pp. 6-38.

Susmita, D., Benoit, L., Siobhan, M. and Wheeler, D. 2009, Climate Change and the Future Impacts of Storm-Surge Disasters in Developing Countries. Centre for Global Development. Washington, DC. 182: 17-19.

UNDP. 2009. Human Development Report 2009. Overcoming Barriers – Human Mobility and

Development. New York, UNDP.

UNESCO. 2013. Social Inclusion of Internal Migrants in India. United Nations Educational, Scientific and Cultural Organization (UNESCO), New Delhi. P.3.

WB. 2015. World Bank Forecasts Global Poverty. World Bank (WB), Washington, DC.

WB. 2016. Agriculture Growth Reduces Poverty in Bangladesh, Dhaka, Bangladesh.

WEF. 2014. The Global Competitiveness Report 2014-15. World Economic Forum (WEF), Geneva, Switzerland. P. 6.

WEF. 2015. Strategic Partner of the Global Risks 2015 Report. World Economic Forum (WEF), Geneva, Switzerland. P. 20.

WHO. 2014. WHO Country Cooperation Strategy: Bangladesh: 2014–2017. World Health Organization (WHO), Dhaka, Bangladesh. pp. 9-14.