

The Socio-Economic Impact Due to Cyclone Aila in the Coastal Zone of Bangladesh

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Abstract: Bangladesh is considered one of the most vulnerable countries for climate change in the world because of increased intensity and frequency of natural disasters. Its geographical location makes it prone to many kinds of hazards, e.g. cyclones, floods, earthquakes, etc. which cause huge losses of lives and damage properties, livelihoods, and economic infrastructure. The coastal regions are relatively more vulnerable to frequent natural disaster. This study tries to explore the socio-economic impact of cyclone Aila affected people on the coastal zone of Bangladesh, especially Shyamnagar Upazila under Satkhira district, which is the most affected area. This study based on secondary data sources that are in agreement with the above background and stated research problem. The analysis of these secondary data assists us in understanding the socio-economic impact of cyclone Aila. Findings show that when cyclone Aila happened that time many roads, culverts, embankment, agricultural field, houses and educational institutes have been damaged. The study also suggests that impact of Aila on study area is severe. Salinity intrusion, freshwater crisis, livelihood pattern change, health, sanitation and malnutrition are caused by this disaster, which also creates other problems. Many people have left their own house and also live very unfavourable life.

Keywords - Climate change, Disaster, Cyclone, Coastal Zone, Socio-Economic, Vulnerable

Research Area: Climate Change

Paper Type: Conceptual Paper

1. INTRODUCTION

Bangladesh is a global hotspot for tropical cyclones. Almost every year, cyclones hit the country's coastal areas in the early summer (April to May) or late rainy season (October to November). Bangladesh has the sixth position among the 173 most natural disaster vulnerable countries in the world (According to World Risk Report, 2014). And also The United Nations Development Programme (UNDP) has marked Bangladesh as the world's most vulnerable country to tropical cyclones. Between 1877 and 2016, Already Bangladesh has faced 171 cyclones, including 45 severe cyclonic storms and 68 tropical depressions. On average, every three years interval a severe cyclone strikes the country (GOB 2009). The landscape of Bangladesh occupies a unique geographic location, spanning a stretch of land between the mighty Himalayan mountain chain on the north and the open bay on the south. It is virtually the only drainage outlet for a vast river basin complex. This land has more than 230 major rivers. Almost every year natural disasters trouble people's lives in some parts of the country. The major disasters concerned are the occurrences of flood, cyclone and tidal surge, flash flood, drought, tornado and riverbank erosion. Among various hazards, the cyclonic storm is one of the dangerous hazards. It has two major impacts, storm surge and wind force. Its physiography and river morphology also contribute to recurring disasters. In recent times, besides geographical setting, Bangladesh has been a victim of climate change,

which causes more intense and frequent natural disasters. Sufferings due to extreme climatic events by climate change have already been experienced by Bangladesh.

Aila attacked the southwestern coastal areas of Bangladesh on 25 May 2009 and affected 15 districts, 76 Upazila and 491 Unions. When hit cyclone Aila the speed of wind was 95 km per hour. Around 190 peoples died 7103 injuries and affected about 3.9 million people. Some 100, 00 livestock were killed and almost 350,000 acres of cropland were destroyed. Apart from this, many infrastructures have been damaged. The damage to the coastal embankment network was severe and directly contributed to the continuation of the post-cyclone scenario (widespread flooding and tidal inundation) currently faced by the worst affected communities. The loss of assets from Aila is about \$ 270 million US dollars. (CRED, 2009)

Among the affected Upazilas, Shyamnagar under Satkhira district was most damaged devastated extensively by Aila. 13 feet high storm surge submerged almost all the affected areas and left almost all the water bodies within the saline, making it unusable and resulted in severe scarcity of fresh water food etc. and destruction of house, toilets, road, dam etc. This surge of water damaged and washed away over 1,742 km's of embankments, removing the only protection available to many people along the coast. (UN assessment report, 2010).The storm lingered over the coast of Bangladesh for a comparatively longer time than cyclone Sidr (2007), which further increased its impact.

2. STUDY AREA

The study conducted on Shyamnagar Upazila of Satkhira district which is the largest Upazila in Satkhira. The Upazila located between 22°36' and 22°24' north latitudes and between 89°00 and 89°19' east longitudes (BBS, Community Series, 2011).The total area of this Upazila is 1968.24sq.km including 1622.65 sq.km of the forest. Shyamnagar Upazila had established in 1982, and it consists of 12 union parishades, 127 mouzas and 233 villages. The total population of this Upazila is 318254; of which male is 153441 and female are 164813. There are around 9 rivers in this Upazila. Average literacy in the whole Upazila is 64.84% (male 38% and female 26.84%). There are 189 government primary schools, 43 high schools, 36 madrasahs and 7 colleges (According to the 2011 census). Agriculture is the main occupation of people. In the study area,64.98% people depends on agriculture, forestry 2.34%, fishing 5.5%, transport 1.61%, commerce 10.11%, service 3.38% and others 12.11%(BBS, Community Series, 2011).



Figure1: Location of the study area (Shyamnagar Upazila)

2. METHODOLOGY

The present study is an attempt to reveal the socio-economic impact in the coastal zone of Bangladesh after cyclone Aila period. Data have been collected from secondary sources. This secondary data have been collected from various published sources including books, journals, newspaper, magazines, annual report and websites of institutions. After completing data collection according to the objective of the study, the collected secondary data have been edited, scrutinized, verified and reviewed by the researcher to avoid contradiction and errors. This study is not free from limitation. When i collected data from the secondary sources then i have faced some problems such as topic related books, reports and papers scarcity.

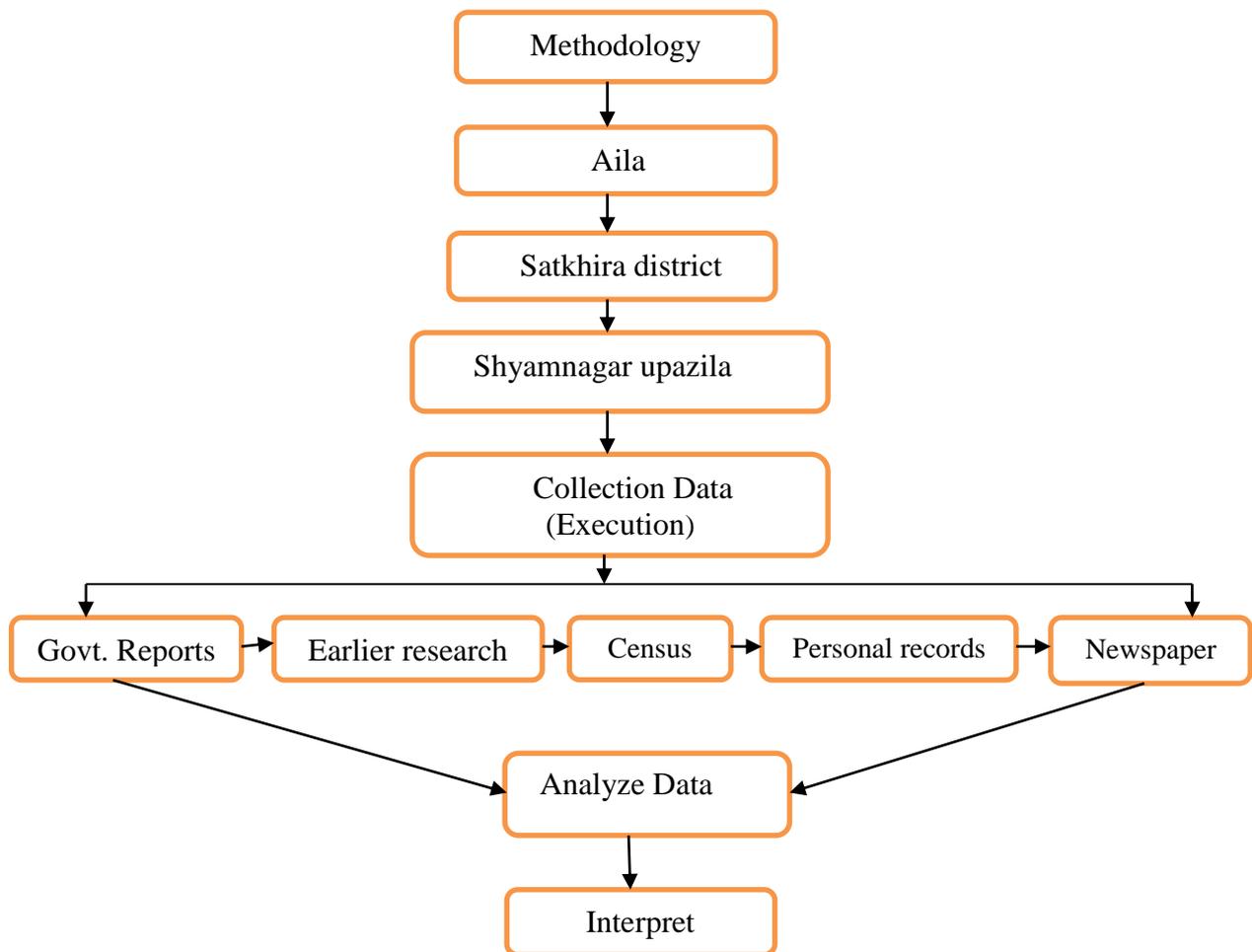


Figure 2: Flow-chart of methods of data collection

4. CLIMATE CHANGE IN BANGLADESH

Bangladesh is one of the largest deltas countries in the world. For this reason, Bangladesh is the most vulnerable country to the natural disaster because of unique geographical characteristics, Population density, Poverty, illiteracy etc. The total area of this country is 147570 sq. km bounded between 20°34´ to 26°38´ north latitude and 88°01´ to 92°41´ east longitude. In the last 100 years (1900 to 2010) average temperature in Bangladesh has increased by 3°C- 3.5° C and such change in temperature increases the

frequency and intensity of climatic hazards. Within the last 30 years, Bangladesh has faced more than 100 cyclones and also about 60 flash flood along with other natural disasters including epidemics, drought and heat waves. The coastal zones of Bangladesh are relatively more vulnerable to natural disaster and also called it home of the natural disaster. Every year about 50 million people are highly affected by the natural disaster (Mirza, 2011). The global temperatures and sea levels are changing day by day. The whole world has changed due to global climate. The issue of global climate change that we are facing is more pressing than ever (BCAS, 2009). Climate change in Bangladesh is affecting the human life and economic development and causing displacement of people. Every year Bangladesh has faced a new experience about global warmings like unexpected rains, dry spells, temperatures and other symptoms of changes. The density of population is one of the main reasons of climate change in Bangladesh. Now the total population of Bangladesh is 163 million people (Bangladesh Demographic Report 2013). Although the country's population has been increasing, on the hand its forests are being decreased (Jahangir Alam 2009). The cause of climate change is an increasing world population and harmful industrialization by the developed countries. For this reason in the developing countries like Bangladesh, due to climate change, the intensity of storms, drought, rainfall, Flood and other natural disaster is increasing. Global warming intimidates our agriculture also, which is the backbone of our country. Every year, natural calamities occur like Sidr and Aila have harmful effects on the agriculture of Bangladesh and also touching every corner of the country. In this regard, Bangladesh has not a lot of resources to mitigate this kind of disaster. As a result, the condition is going on out of control. The coastal zones of Bangladesh and the coastal people are highly affected by the climate change and due to the natural disaster; they are losing their ponds, lakes, dams, and forestry. Due to climate disaster, the national and regional species of fish are being lost. Experts agree that due to climate change and natural disaster, 54 species of fish have already been lost and forest and livestock are also lost. Most of the people of Bangladesh are living in rural areas and living a very unfavourable life. According to the water development board, there is a total of 11 thousand km of the embankment which has been developed by the water board, of which about 250 km were damaged by the water surges during cyclones Sidr and Aila. The weather of Bangladesh has changed due to the climate change. The water levels have fallen, the temperatures have increased and the incidence of the flood, dry spells, and cyclones all have increased and also invading both people's lifestyle and crops. At least rivers, including the Padma, the Gomati, and the Teesta, have been dried. And other rivers of Bangladesh are being lost because they are being filled with soil. The Northern part of Bangladesh is becoming desert day by day. Geographical and biological changes in the area are treating normal life (Shamsudoha and Chy 2009). To mitigate climate change in Bangladesh needs technological and economic support to survive.

5. RESULT AND DISCUSSION

Cyclone Aila was a tropical cyclone that had been developing over the Bay of Bengal and hit Bangladesh on May 25th. About 15 districts were affected in Bangladesh, and more than three million people have been a coup by the cyclone. Around 190 people have died from the acute cyclone Aila. According to authorities, emerged on the media report, nearly 7100 people were forced to take refuge on rooftops and rafts. As a result of breaking various rives dams, causing extensive inland flooding. This kiss-curl of water damaged and washed away over 1742 km of dams, carry away the only defence available to many people along the coast. Approximately 100,000 livestock were killed and also around 350,000 acres of cropland were spoiled. Besides, there were many houses and infrastructures destroyed (report of Aila by IMD, 2009).

Among the affected districts, Satkhira is one of the highest affected districts in Bangladesh. Satkhira district has 7 Upazilas, of which Shyamnagar Upazila is the most affected area in Satkhira. Shyamnagar receives the highest amount of impact in its infrastructures including education institutions, religious institutions, roads, bridges, embankment, agricultural field etc. There are 12 unions in Shyamnagar of which more than 34 thousand people became homeless in Gabura and Padmapukur union. According to household damage statistics estimates, about 160432 people were adversely affected. On the other hand, Shyamnagar Upazila parishad revealed that 59 peoples have died from the cyclone Aila, of which 28 are from Gabura, 10 from Padmopukur, 15 from Munshiganj, Ishwaripur and Burigoalini and 6 from Kashimari and Koikhali union.

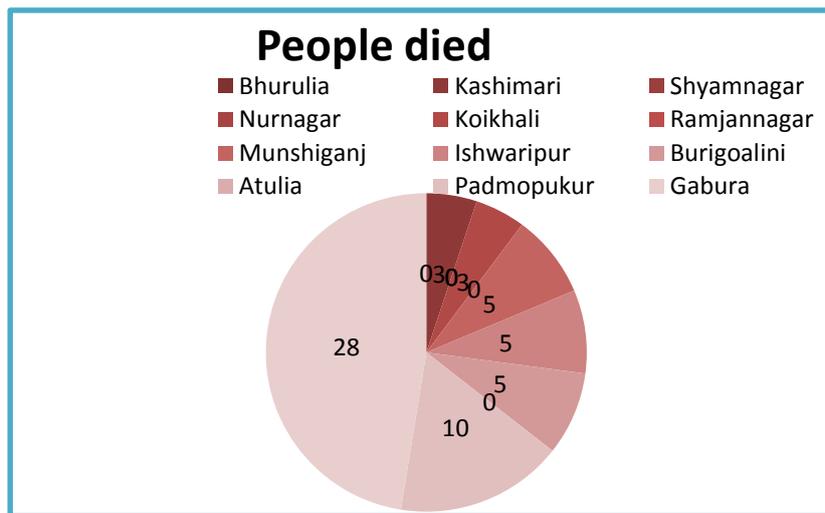


Figure 2: Total people died of the study area.

Aerial coverage shows that 359.55 sq. km. was fully flooded by the surge water. (Table1). Munshiganj and Gabura Upazilas were mostly affected. These two unions were the most inundated than the other unions of Shyamnagar. The Affected area of Gabura and Munshiganj were 49.12 km and 41.11 km (Table 1). Besides, Padmopukur, Burigoalini, Koikhali and Atulia were other worst affected union than Munshiganj and Gabura. (Unnayan Onneshan, 2010).

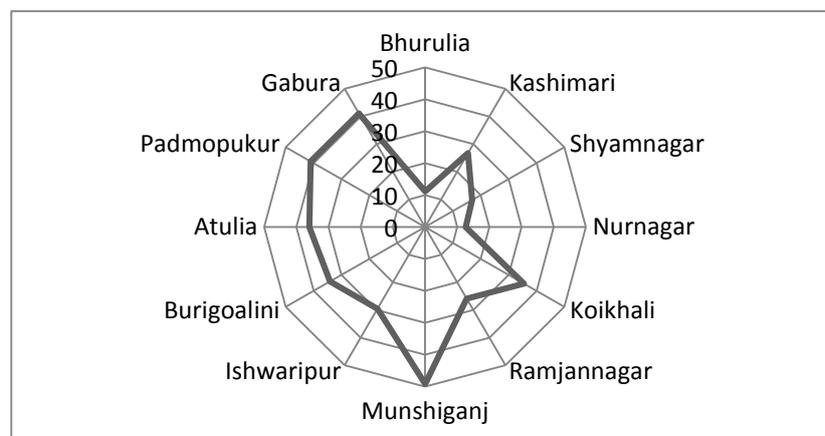


Figure 3: Areal coverage of damages of cyclone Aila in Shyamnagar Upazila

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According to household damage statistics estimates that about 160432 people were adversely affected, of which consequently 104227, 22865 and 33340 people were very highly affected, highly affected and partial affected. The people of Gabura and Padmopukur were mostly affected among the unions of the Shyamnagar Upazila. Consistently 26884 and 21663 people were enormously affected of these two unions and they were living very adversely. (Table 1)

Table1: Summary of the damage information on households, affected people and Institutions.

SI. No	Affected Union	Affected Area (sq.km)	Affected People			People dead	People injured	Affected Families	Damaged households	
			Very high	High	Partial				Full	Partial
1	Bhurulia	11.15	65	85	125	0	4	1350	26	80
2	Kashimari	26.72	7500	2075	2925	3	17	1012	3000	2000
3	Shyamnagar	16.88	500	350	1900	0	12	675	200	900
4	Nurnagar	12.6	60	100	375	0	9	1012	24	190
5	Koikhali	35.45	1815	1410	1955	3	20	1349	726	1346
6	Ramjannagar	25.9	1615	1385	1610	0	34	1012	646	1198
7	Munshiganj	49.12	15245	3120	9255	5	189	1350	6098	4950
8	Ishwaripur	29.55	960	585	1280	5	48	1012	384	746
9	Burigoalini	34.1	14785	5775	6395	5	194	4723	5914	4868
10	Atulia	35.9	13135	6420	5430	0	187	4386	5254	4020
11	Padmopukur	41.07	21663	320	180	10	249	7085	12000	200
12	Gabura	41.11	26884	1240	1910	28	467	8773	11450	630
		359.55	104227	22865	33340	59	1430	33739	45722	21128

Source: Upazila Nirbahi Office, Shyamnagar.

Besides, there were a lot of water sources damaged, of which 412 deep tube-wells, 554 shallow tube-wells, 158 pond sand filters, 20,850 latrines, 2006 sweet water ponds, 20 (km) embankment fully damaged and 66 (km) embankment partially damaged (Damaged report prepared by UNO officer, Shyamnagar).

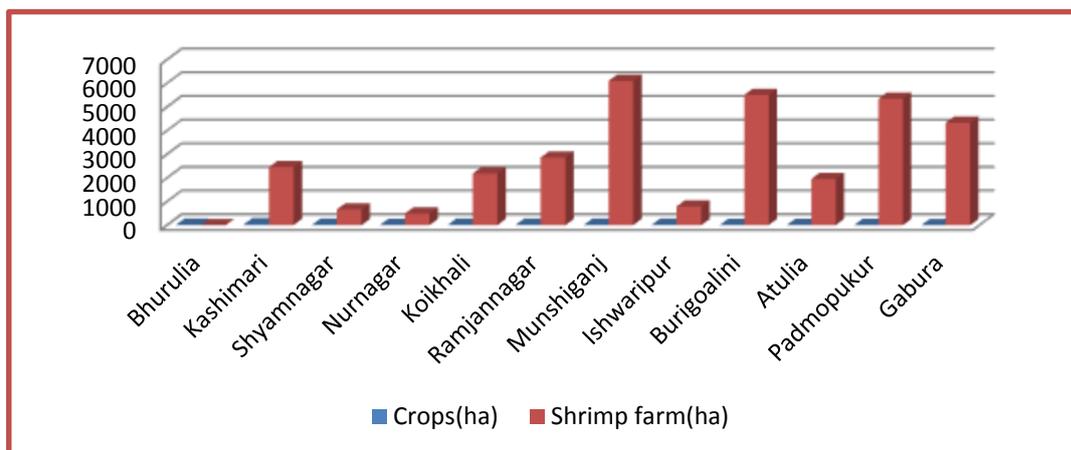


Figure 4: Damage description in agriculture sector of the study area

Most of the people are engaged in agriculture and fisheries in Shyamnagar Upazila. About 64.98% people depend on agriculture including 38.16% on cropping; livestock, forestry and fishery, and 26.82% on selling agriculture labor (BBS, Community series,

2011). But after Aila hit, all the agricultural field and also livelihood pattern were crumbled up through losing all agricultural settings in the zone. About 194 ha of cropland was fully damaged by cyclone Aila, whose total cost around 2.4 million BDT and also the loss of about 550 million BDT (32661.7 ha) in shrimp sector (Table 2). Above the (Figure: 4) shows that Munshiganj and Burigoalini were the highly affected area for the agricultural sector than the other unions of shyamnagar Upazila. They had lost their all survival facilities during the cyclone Aila. Table 2 delimitates total loss in monetary value received from the different sector in different unions of Shyamnagar Upazila due to cyclone Aila.

Table2: Damage statistics on agriculture, livestock and fisheries.

SI. No	Affected union of Shyamnagar	Damage description			
		Crops (ha)	Cattle (No.)	Poultry (No.)	Shrimp farm (ha)
1	Bhurulia	18.7	0	0	0
2	Kashimari	42.7	21	1036	2456.66
3	Shyamnagar	21.1	4	0	660.6
4	Nurnagar	13.3	3	25	489.57
5	Koikhali	23	11	0	2185.95
6	Ramjannagar	18.5	19	45	2859.22
7	Munshiganj	16.6	28	5,716	6095.09
8	Ishwaripur	18.5	19	3,121	788.4
9	Burigoalini	10.2	129	2,445	5504.14
10	Atulia	7.4	262	3,366	1951.02
11	Padmopukur	3.0	57	4,429	5346.08
12	Gabura	1.0	81	3,095	4324.97
Total damage		194	634	23,278	32661.7
Damage in BDT. (Approximate)		23,68,000	23,68000	3491000.25	55,2396,000

Source: Upazila Nirbahi office, Shyamnagar.

On other hand, There were many poultry and livestock also ruined by Aila. Only in the Shyamnagar Upazila, Around 634 cattle and 23,278 poultry were lost by Aila (Table 2). Before Aila, people used to have poultry and livestock's at the household level, but almost 80% animals were lost during cyclone Aila. They were affected even after Aila because they were interested in selling livestock and poultry lack of food and grains. (S.M Didar-ul Islam).

As a cyclone prone-area, the people different village of Shyamnagar Upazila has faced numerous cyclones over their lifetime. However, cyclone Aila was different from others. As a result, the whole areas are washed away unexpectedly. Although the villages are located in the cyclone zone, the nearest cyclone shelter is away for many people and not sufficient. So, the people of the villages took shelter on the roof-top of the primary school, the mosque and the concrete-built houses and even on the embankments of the river.

6. CONCLUSION

Natural disaster is a regular phenomenon for Bangladesh. And coastal zone of Bangladesh is the highly vulnerable to natural disaster. Every year, the people of the coast are losing their

valuable properties and lives due to the cyclone. This socio-economic impact falls not only on the people in the coastal belt but also the people of the whole country. So, now the time has come, to mitigate natural disaster, like cyclone but coping with cyclone is easily possible. Bangladesh Government and some Non-Government Organizations (NGO) have taken some steps to protect natural disaster. They are working for cyclone affected people for improving their livelihood and minimize their loss. But it is not sufficient to alleviate. For this reason, they should also take various projects in this regard as well as sustainable development. And also the civil society of Bangladesh should take a glorious step to relieve this problem.

REFERENCES

1. BBS, (2011) "Information on Satkhira District", Community Series, Bangladesh Bureau of Statistics, Dhaka, Bangladesh.
2. UNDP, (2004) HDR. "Reducing Disaster Risk: A Challenge for Development—A Global Report." New York, USA: UNDP.
3. Birkmann, J., Garschagen, M., Mucke, P., Schauder, A., Seibert, T., Welle, T., & Matuschke, I. (2014). World Risk Report 2014.
4. BBS, (2009) Report of monitoring employment survey statistics division. Ministry of Planning, Government of Bangladesh.
5. CRED, (2009) EM-DDAT: The OFDA/CRED International Disaster Database, University Catholique de Louvain, Brussels, Belgium.
6. UN, (June 2010) Cyclone Aila Joint Multi-sector Assessment & Response Framework, New York, USA.
7. BBS, (2011) National Census in Bangladesh, Bangladesh Bureau of Statistics, Dhaka, Bangladesh.
8. Unnayan Onneshan, (2010) Cyclone Aila: One year on Natural Disaster to Human Sufferings, Dhaka, Bangladesh.
9. UNO, (2009) Damage Report of Aila, Upazila Nirbahi Officer in Shyamnagar, Satkhira, Bangladesh.
10. Islam, S. D. U. (2013). Evaluation of Environmental and Socio-economic Impact Due to Cyclone Aila, Present Condition and Adaptation Practices in Shyamnagar, Satkhira of Bangladesh.
11. IMD, (2009) Report of Aila, RCMS, Mausam Bhavan, Lodhi Road, New Delhi, India,
12. Mirza, M. M. Q. (2011). Climate change, flooding in South Asia and implications. *Regional Environmental Change*, 11(1), 95-107.
13. Rabbani, M. G. (2009). Climate-forced migration: a massive threat to coastal people in Bangladesh, *clime Asia: Climate Action Network-South Asia Newsletter*. BCAS, Dhaka
14. Mohammad, N. (2015). Climate change and Displacement in Bangladesh: Issues and Challenges. *Handbook of Climate Change Adaptation*, 177-194.
15. Kothari, C. R. (2004). *Research Methodology: Methods and techniques*. New Age International.