

Understanding the Nexus: Causes, Hotspots, and Impacts of Crimes Amid Climate Change in the Southern Region of Bangladesh

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DOI: <https://dx.doi.org/10.47772/IJRISS.2024.803117S>

Received: 30 May 2024; Accepted: 08 June 2024; Published: 06 July 2024

ABSTRACT

The southern coastal regions of Bangladesh face multifaceted challenges from both natural disasters for climate change and criminal activities. Cyclones, floods, riverbank erosion, and salinity intrusion pose severe threats to lives and property, particularly in vulnerable areas like Sarankhola, Dacope, Koyra, Shyamnagar, and Ashashuni. Crime rates vary throughout the year, with molestation, theft, murder, burglary, and kidnapping being prevalent types. Poverty, unemployment, drug addiction, and political conflicts contribute significantly to crime, with certain areas identified as crime hotspots. There is a correlation between natural disasters and crime, with occurrences like theft, molestation, corruption of relief goods, smuggling, and kidnapping reported during and after events like Cyclone Sidr and Cyclone Aila. The occurrence of crimes increases significantly during and after disasters, indicating the complex interplay between environmental challenges and criminal activities in the region. Efforts to address these challenges must involve integrated approaches that consider both the socio-economic factors driving crime and the environmental factors exacerbating them.

Key Words: Southern coastal region, Crime rate, Crime hotspots, Climate change

INTRODUCTION

The southern region of Bangladesh faces a unique confluence of challenges, characterized by both natural disasters and pervasive criminal activities. Situated in a riverine country prone to cyclones, floods, riverbank erosion, and salinity intrusion, this region grapples with the perennial threat of environmental calamities that wreak havoc on lives and livelihoods. Simultaneously, crime rates in the area remain alarmingly high, with various criminal activities, including molestation, theft, murder, burglary, and kidnapping, plaguing communities. Understanding the complex interplay between these two phenomena—natural disasters and crime—is imperative for devising effective strategies to mitigate their adverse impacts on the region's socio-economic fabric. The causes of crime in the southern region are multifaceted, rooted in social, economic, and political contexts. Poverty and unemployment emerge as major predictors of criminal behavior, driving individuals towards illicit activities for survival. Drug abuse exacerbates the problem, fueling various criminal behaviors like theft and violence. Political instability and corruption further compound the crime issue, undermining the rule of law and fostering an environment conducive to criminal activities. Cultural norms that condone violence and aggression also contribute to the prevalence of crime, with attitudes towards violence and masculinity serving as significant predictors.

Moreover, a host of socio-economic factors, including inadequate education, rapid urbanization, domestic violence, gang-related violence, and weak law enforcement, exacerbate the crime problem in the region.

Weak administrative structures and corruption enable criminal syndicates to thrive, perpetuating trans-border crimes like smuggling and human trafficking. Additionally, the impact of climate change intersects with crime causation, with environmental degradation exacerbating socio-economic vulnerabilities and driving individuals towards criminal activities. To address these multifaceted challenges, it is essential to examine the impacts of both natural disasters and crime on the southern region of Bangladesh comprehensively. Cyclone SIDR, one of the most devastating disasters in recent memory, serves as a poignant example of the catastrophic effects of natural calamities, resulting in significant economic damage and loss of life. Concurrently, crime remains a pressing issue, with molestation emerging as the most prevalent crime, followed by theft, murder, and burglary. The distribution of crimes varies spatially and temporally, with certain areas identified as crime hotspots due to a combination of socio-economic vulnerabilities and environmental factors.

Understanding the nexus between natural disasters, crime, and socio-economic vulnerabilities is crucial for devising holistic strategies to address the challenges facing the southern region of Bangladesh. By integrating insights from criminology, environmental science, and socio-economic analysis, policymakers can formulate evidence-based interventions to enhance resilience, strengthen law enforcement, and promote socio-economic development in the region. Ultimately, fostering a safe and sustainable environment requires concerted efforts to address the root causes of crime, mitigate the impacts of natural disasters, and build resilient communities capable of weathering future challenges.

LITERATURE REVIEW

Crime in the southern region of Bangladesh is a multifaceted issue with numerous contributing factors, primarily rooted in social, economic, and political contexts. One significant factor is poverty. According to Ahmed et al. (2019), poverty and unemployment are major predictors of crime, as economic desperation can drive individuals towards criminal activities for survival. Drug abuse is another crucial factor; Rahman et al. (2017) highlight that drug use is linked to various criminal behaviors, including theft and violence. Political instability and corruption exacerbate the crime problem. The Human Rights Watch (2020) reports that rampant corruption undermines the rule of law, creating an environment where crime can flourish. Additionally, cultural norms that condone violence and aggression also contribute to criminal behavior. Rahman et al. (2017) found that attitudes towards violence and masculinity are significant predictors of crime.

Several other factors further compound the issue. The southern region of Bangladesh has a lower literacy rate (60.9%) compared to the national average (72.8%), which limits opportunities and can lead individuals towards crime (Bangladesh Bureau of Statistics, 2020). Rapid urbanization has led to overcrowding, unemployment, and poverty in urban areas, increasing the risk of crime. Domestic violence is prevalent and linked to higher crime rates, particularly among women (Islam et al., 2016). Gang-related violence and organized crime are also significant issues, as reported by the United Nations Office on Drugs and Crime (2020). Furthermore, weak law enforcement, characterized by police corruption and inadequate resources, undermines efforts to prevent and respond to crime effectively. Climate change factors also intersect with crime causation in this region. Bangladesh's vulnerability to climate change impacts, such as sea level rise and extreme weather events, is significant despite its relatively low greenhouse gas emissions (IPCC, 2018). Deforestation, driven by agricultural expansion, urbanization, and logging, contributes to climate change by reducing carbon storage capacity (Hussain et al., 2021). Land use changes, driven by population growth, migration, and industrialization, similarly impact carbon storage (FAO, 2020).

Natural factors like volcanic eruptions and solar radiation also play a minor role in climate change but are overshadowed by human activities (IPCC, 2018). Sea level rise, caused by melting glaciers and seawater expansion, has severe consequences for Bangladesh, including soil and water salinization and more frequent

coastal flooding (Rahman et al., 2020). Extreme weather events, such as cyclones, have devastating effects on infrastructure, agriculture, and human life, with their frequency and intensity increasing due to climate change (Dasgupta et al., 2019). Industrialization and urbanization contribute to greenhouse gas emissions, land use changes, and deforestation, particularly in industrial zones (Bhuiyan et al., 2021). Agricultural practices, including the use of chemical fertilizers and pesticides, also contribute to emissions and deforestation (Haque et al., 2020). These complex and interlinked causes of climate change require coordinated efforts at national and international levels involving various stakeholders to mitigate their impact and reduce the associated crime rates in the southern region of Bangladesh.

The southern region of Bangladesh faces severe climate change impacts, including cyclones, floods, and sea-level rise. Criminal activities like deforestation, land grabbing, and illegal fishing exacerbate these environmental challenges. Deforestation, as highlighted by Hossain et al. (2019), contributes significantly to climate change by increasing carbon emissions, reducing biodiversity, and intensifying floods and landslides, with an annual deforestation rate of 0.3%, the highest in the country. Land grabbing, which involves the illegal acquisition of land, further exacerbates environmental degradation. Uddin et al. (2017) found that land grabbing leads to deforestation, soil erosion, and biodiversity loss, undermining local communities' livelihoods and worsening climate change impacts. Illegal fishing practices, such as bottom trawling and the use of dynamite, deplete fish stocks and damage marine ecosystems, including coral reefs and seagrass beds, according to the Food and Agriculture Organization (FAO) (2018). These activities hinder sustainable fisheries and climate adaptation efforts. Similarly, illegal logging has led to the loss of 700,000 hectares of forest, reducing carbon sequestration and increasing emissions (BCAS, 2019). This also results in soil erosion, landslides, and biodiversity loss.

Land use changes, such as converting forests and wetlands into agricultural land and shrimp farms, increase carbon emissions and degrade soil and water resources. Rahman et al. (2020) argue that these changes also heighten vulnerability to natural disasters like floods and cyclones. Additionally, air pollution is a significant issue. The World Health Organization (WHO) (2018) reports that air pollution causes over 10,000 premature deaths annually in the region and contributes to higher carbon emissions and climate change. In conclusion, addressing criminal activities like illegal logging, land grabbing, and illegal fishing, alongside mitigating harmful land use changes and air pollution, is crucial for reducing the impacts of climate change and promoting sustainable development in the southern region of Bangladesh.

Objectives of the Study

1. To find out the causes between crimes and Climate change in the southern region of Bangladesh.
2. To identify the hotspots of crimes in the southern region of Bangladesh in relation to climate change.
3. To study about the impact of crimes in the southern region of Bangladesh for the climate change.

By pursuing these objectives, it is possible to reduce crimes and the negative impact of climate change in the southern region of Bangladesh.

Research Questions:

1. What are the causes of crimes for climate change in the southern region of Bangladesh?
2. How many hotspots of crime for climate change in the southern region of Bangladesh?
3. What are the impacts of crimes for climate change in the southern region of Bangladesh?

METHODOLOGY

This study employs an analytical research design to investigate the relationship between crime and climate change in the southern region of Bangladesh. Analytical research design is appropriate as it involves

analyzing data to understand variable relationships, test hypotheses, and determine cause-and-effect relationships. The study explores hypotheses suggesting that certain crimes increase with extreme weather events. Data is collected on crime rates and climate variables from law enforcement agencies and environmental records, with clear definitions of variables and controls for confounding factors. A mixed-method research approach, combining quantitative and qualitative techniques, is used to achieve the study’s objectives. Quantitative data is collected through structured questionnaires, while qualitative data is gathered using checklists and guidelines. This integration provides a comprehensive understanding, leveraging the advantages of both approaches and ensuring triangulation for reliability. The methodology includes a detailed literature review and brainstorming to conceptualize the study, focusing on the impacts of climate change-related disasters and crime in coastal regions. The study area includes Satkhira, Khulna, and Bagerhat, regions highly vulnerable to climate change and prone to natural disasters. The population of the study includes police officials, civil bureaucrats, and civil society members, with a convenience sampling method used to select 50 respondents from these groups.

Primary data is collected through interviews, questionnaires, and focus group discussions (FGDs). Interviews provide in-depth, contextual, and qualitative insights, though challenges like reluctance to share information and fear of retaliation are noted. Questionnaires gather demographic, socio-economic, and environmental data, while FGDs offer diverse perspectives and in-depth exploration despite obstacles like sensitive topics and logistical challenges. Secondary data sources include working papers, articles, journals, books, crime data from the Bangladesh Police Headquarters, and climatic data from relevant authorities. Statistical tools and software such as MS Excel, SPSS, and GIS techniques are employed for data analysis and representation. The study’s findings will inform future management strategies for coastal areas to mitigate vulnerabilities, providing a foundation for further research in other regions with similar challenges.

RESULTS

Research Question 01: *What are the causes of crimes for climate change in the southern region of Bangladesh?* Criminologists in the twenty-first century have identified a wide array of factors contributing to criminal behavior, acknowledging that societal, cultural, systemic, and economic influences collectively impact an individual’s propensity for crime. Motivations for committing crimes include greed, anger, jealousy, revenge, and pride. While some individuals meticulously plan their crimes to maximize rewards and minimize risks, others act impulsively driven by rage or fear. The causes of crime are multifaceted and vary across different times and locations.

Table 1: Main Causes of Crime and Climate Change

Causes	Percentage
Poverty	2.86%
Unemployment	13%
Lack of proper education	12.75%
Political Conflicts	3.60%
Smuggling	0.80%
Tendering	2.44%
Satellite culture	66%
Decay of Morality	2.58%
Misuse of Drug	2.81%
Rising price of commodities	6.05%
Weak Administration	2.06%

Injustice	4.97%
Lack of proper safety	7.13%
Illiteracy	5.67%
Others	–

Source: Field Survey 2023

Poverty is frequently cited as a significant cause of crime, with historical and contemporary research indicating that impoverished individuals often engage in criminal activities as a means of survival. For instance, Aristotle and modern researchers like Khan and Kader (2010) have pointed out that poverty has been consistently linked to higher crime rates. Unemployment also contributes significantly, as it leads to frustration and, in some cases, drives individuals towards crime. Bongner noted that lack of work can lead to alcoholism, further exacerbating criminal tendencies.

Inadequate education is another crucial factor. Despite governmental efforts to improve educational access, the quality often falls short, contributing to social disorder and crime. This was evident in the involvement of some students in terrorist attacks in Dhaka in 2016. Political conflicts and power struggles also foster environments where crime can flourish, as highlighted by 3.6% of survey respondents. Smuggling is a particular concern in border areas like Jessore and Satkhira, leading to other crimes such as murder and human trafficking. Weak administration and corruption further enable such activities, making trans-border crimes prevalent. Satellite culture’s influence is significant, with 66% of respondents attributing it to increased crime, as it impacts social values and lifestyles. The decay of social morality and misuse of drugs also significantly contribute to crime rates, with drug addiction linked to various social crimes due to the need to finance drug habits. Rising prices of necessary commodities, weak administration, injustice, lack of proper safety, and illiteracy further compound the issue, creating a complex web of factors driving criminal behavior.

Table 2: Main Causes of Climate Change

Causes	Frequency	Percentage
Global Warming	17	34%
Deforestation	1	2%
Heavy Rainfall	17	34%
Sedimentation on River bed	4	8%
River/Sea current	2	4%
Penetration of Saline water	2	4%
Narrowness of Embankment	2	4%
Lack of Drainage System	4	8%
Rise of Sea-level	1	2%

Source: field Survey 2023

Climate change also plays a significant role in exacerbating socio-economic conditions that lead to crime. Global warming, responsible for 34% of climate-related issues, increases the frequency of natural disasters like cyclones and floods, which can devastate livelihoods and increase poverty, thereby driving crime. Deforestation, contributing to soil erosion and temperature rise, similarly disrupts ecological balance and local economies, furthering socio-economic instability. Heavy rainfall, also accounting for 34%, can lead to severe flooding, damaging homes and infrastructure, pushing people into desperate situations where crime

may seem like a viable option. Sedimentation on riverbeds and changes in river or sea currents contribute to environmental degradation, impacting agriculture and fishing, crucial livelihoods in coastal regions.

The penetration of saline water and the narrowness of river or sea embankments aggravate these conditions, making farming difficult and increasing food insecurity. This environmental strain, combined with a lack of proper drainage systems and the rising sea level, further disrupts local economies and living conditions. The interconnection between these causes of climate change and crime is evident. Climate-induced economic hardships lead to increased poverty, unemployment, and desperation, creating fertile ground for criminal activities. As environmental conditions deteriorate, social and systemic responses become strained, highlighting the urgent need for integrated approaches to address both climate change and crime. By addressing the root causes of climate change, improving education, and strengthening economic and social systems, it is possible to mitigate the factors driving crime in affected regions.

Research Question 02: *How many hotspots of crime for climate change in the southern region of Bangladesh?* Occurrence of crimes is a common scenario in the rural and urban areas including coastal areas of Bangladesh. All occurrences of crimes are not always reported to the police station. Some of them are not reported to avoid some hassle which are admitted by the local people. There are some places which are very sensitive for the occurrence of crimes in every district as well as Upazilla/thana in Bangladesh. Similarly, some places in the study area, very sensitive for the occurrence of crimes are identified as hot crime spots. These spots are selected by the respondents in the field study shown in the table 03. These spots are also recognized by the local authority and some intellectual personalities. The spots of crimes are identified in the exclusive coastal thanas. From the field survey, some places are identified as the home for criminals who are very powerful with modern and huge weapons in collaboration with the local leaders. The following places are recognized as hot crime zone.

Table 3: Hotspots Crime Zone

District Name	Upazilla Name	Hotspots Crime Zone(Local Place's Name)
Khulna	Koyra	Maheswaripur, Shakherghona Antabunia, Kushadanga, Kalikapur, Kushadanga, Aamtola, Fatekati, Madinabad Sathalia, Jaigirmahal, Mathbari Choukini Arjunpur BogaBarpata.
	Paikgasa	
	Dakop	
Bagerhat	Kachua	Hazarkhali, Baikhali, Ramnagar, Ghajalia market, Chapan, Teligati, Dhansagor, Khontakata, Rayenda, Southkhali,
	Moralganj	
	Shoronkhola	
Satkhira	Shaymnagar	Gabura, Patakhali, Gharilal, Jhapa, Kamalkathi. Praptapnagar, Anulina, Khajra, Manikhali. Kulia, Parulia, Shakhipur, Nouapara,
	Ashashuni	
	Debhata	

Source: Field Survey 2023

The above table shows the major hotspots of crimes in the southern region of Bangladesh

Research Question 03: *What are the impacts of crimes for climate change in the southern region of Bangladesh?* The southern zone of Bangladesh, particularly prone to natural disasters, frequently experiences significant economic damage and loss of life. Cyclone SIDR, for instance, resulted in the deaths of 3,347 people, with millions suffering various losses. The cyclone devastated 742,827 acres of crops, damaged 563,877 houses, and caused the deaths of 1,778,507 livestock (Montu, 2008). Local perceptions from field surveys indicate substantial average damages in various sectors: houses (12,368.82 TK), crops (14,887.34 TK), property (14,345.21 TK), nets and boats (12,946.86 TK), and businesses (35,916.66 TK). Crime is another pressing issue, with a variety of criminal activities reported in the region. Molestation is the most frequent crime, particularly high in October and lowest in January, driven by factors such as drug addiction, illiteracy, harassment, dowry, and poverty. Theft is the second most common crime, peaking in August due to heavy rainfall and adverse working conditions. Other crimes like murder, burglary, kidnapping, and corruption of relief goods are also prevalent. The southern zone saw the highest crime rates in 2011 (15.77% of the country’s total) and the lowest in 2008 (9.55%) due to a major disaster-free period and a stable law and order situation under a caretaker government.

Seasonal crime variations are notable, with the lowest occurrences in January (6.75%), February (7.08%), and December (7.16%), due to harvesting periods and lower cyclone activity. Conversely, crime rates increase from February to July, with peaks in dacoity, murder, and child kidnapping in April, law violence in June, and burglary in July. July records the highest crime rate at 9.29%, followed by August (9.20%) and October (9.11%). Spatially, crime distribution is uneven, with the highest occurrences in Satkhira (10.48%), Bagerhat (8.56%), and Khulna. Factors contributing to high crime rates include proximity to borders, routes for smuggling and human trafficking, salinity intrusion, cyclone impacts, and prevalent shrimp and salt cultivation.

Natural disasters such as cyclones, floods, riverbank erosion, and salinity intrusion are common in the coastal zones, with cyclones being the most devastating. Cyclones often lead to increased criminal activities during and post-disaster periods. According to a 2023 field survey, 88.4% of respondents acknowledged a rise in crimes like theft (70%) and molestation (28%) during such times. The relationship between crime and disasters is complex, with increased criminal behavior attributed to factors like unemployment, lack of education, narcotics, and the presence of miscreants.

Table 04: Impacts of Crimes for Climate Change

Category	Details
Economic Damage (Average in TK)	Houses: 12,368.82, Crops: 14,887.34, Property: 14,345.21, Nets and Boats: 12,946.86, Businesses: 35,916.66
Cyclone SIDR Impact	Deaths: 3,347, Affected People: 8,923,259, Crops Damaged: 742,827 acres, Houses Damaged: 563,877, Livestock Lost: 1,778,507, Educational Institutes Damaged: 4,231
Highest Crime Types	Molestation: Highest in October, lowest in January; Theft: Highest in August
Crime Rate Peaks	Highest Crime Month: July (9.29%), Followed by August (9.20%) and October (9.11%)
Lowest Crime Months	January (6.75%), February (7.08%), December (7.16%)
Yearly Crime Distribution	2011: 15.77% of Bangladesh’s total crimes, 2008: 9.55% of total crimes

Crime Hotspots (2015-2020)	Satkhira: 10.48%, Bagerhat: 8.56%, Khulna
Common Crimes During Disasters	Theft (70%), Molestation (28%) during/post-Sidr and Aila
Disaster Types	Frequent: Cyclone, Flood, Riverbank Erosion, Salinity Intrusion, Tidal Surge; Infrequent: Earthquake, Landslide, Drought, Water Logging

Source: Field Survey 2023

SUMMARY OF THE FINDINGS

In the southern zone of Bangladesh, various factors contribute to crime and disasters, with significant impacts on local communities. According to respondents, poverty is a primary cause, with 2.86% acknowledging its role in crimes like theft and dacoity (Khan and Kader, 2010). Smuggling, particularly in border districts like Jessore and Satkhira, is implicated by 0.8% of respondents and is linked to other crimes such as murder and human trafficking (Rahman, 2017). Unemployment is cited by 13% of respondents as a key factor driving individuals towards crime, while 12.75% highlight the lack of proper education as a contributing factor. Political conflicts account for 3.6%, and the expansion of dominance is noted by 1.78%. Climate change exacerbates these issues, with global warming, deforestation, and heavy rainfall cited as major causes of disasters. Global warming is responsible for 6.9% of coastal disasters, deforestation for 13.11%, and heavy rainfall for 7.84%. Sedimentation on river beds and salinity intrusion account for 11.08% and 12.96% of coastal disasters, respectively. Seasonal variations affect crime and disaster rates, with 30% of crimes occurring in winter and 40% of disasters occurring in the rainy season. Crimes typically occur at night (38%), while disasters are perceived to occur more often at night (50%) (Ahmad and Baqee, 1988).

In Bangladesh's coastal areas, theft is prevalent year-round, particularly during the rainy and winter seasons due to poverty and unemployment. Robbery and murder rates are high in regions like Koyra, Shyamnagar, and Dacope due to accessibility issues, lack of education, and weak law enforcement. Smuggling and human trafficking are significant in Mongla and Benapol, while political violence is widespread, particularly in Fultala Khulna. Climate change exacerbates these issues, with severe cyclones, floods, and salinity intrusion affecting socio-economic conditions and contributing to crime (Islam, 2005; Rasheed, 2011; Hossain, 2012; Azad and Khan, 2015). The southern coastal regions of Bangladesh face significant challenges from both natural disasters and criminal activities. Cyclones, floods, riverbank erosion, and salinity intrusion pose severe threats to lives and property, with areas like Sarankhola, Dacope, Koyra, Shyamnagar, and Ashashuni being particularly vulnerable (Montu, 2008). Crime rates vary throughout the year, with molestation being the most prevalent type, followed by theft, murder, burglary, and kidnapping. Factors such as poverty, unemployment, drug addiction, and political conflicts contribute to the occurrence of crimes, with certain areas identified as crime hotspots (Montu, 2008). There is a correlation between natural disasters and crime, with crimes like theft, molestation, corruption of relief goods, smuggling, and kidnapping being reported during and after disasters like Cyclone Sidr and Cyclone Aila (Montu, 2008). The occurrence of crimes increases significantly during and after disasters, indicating the complex interplay between environmental challenges and criminal activities in the region.

CONCLUSION

Crime in Bangladesh's southern zone exhibits temporal and spatial variations, with molestation being the most prevalent crime, followed by theft, murder, burglary, and kidnapping. Factors like poverty, unemployment, drug addiction, and political conflicts contribute to crime rates. The highest occurrence of

crimes is in Satkhira (10.48%), Bagerhat (8.56%), and Khulna. Natural disasters like cyclones, floods, erosion, and salinity intrusion exacerbate socio-economic challenges, disrupting community life. Eighty-eight percent of respondents noted increased crime during and after disasters, with tropical cyclones being particularly impactful. Theft (70%) and molestation (28%) are common post-disaster crimes. Factors contributing to molestation during cyclones include unemployment and lack of education. Corruption of relief goods, smuggling, and kidnapping occur at lower rates. The severity of cyclones in areas like Sarankhola and Dacope underscores the vulnerability of Bangladesh's coastal zones to natural disasters. (Montu, 2008)

RECOMMENDATIONS

Based on the results and findings, the following recommendations can be considered as future guideline follows:

1. The coastal belt of Bangladesh is not free from impact of climate change and crimes.
2. Integration, cooperation, coordination and harmonization among different DRR institutions in Bangladesh are very important to ensure the sustainability to manage the future disaster risk in Bangladesh.
3. Education and training are very important in Bangladesh. Continuous training for public sector is very important to ensure the sustainability of DRR and CCA programmes.
4. The sea and land route which are the suitable transit for smuggling and human trafficking must be supervised and controlled on regular basis.
5. Hot spots of criminal activities of the study area should be monitored on regular basis.
6. Insurance for coastal population must be enforced. Special provision must be made for women, children, the aged and disabled people. Crop insurance may be coined.
7. Public awareness would be increased in the view of climate change and crime.

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