Independent Review of IRBD Bangladesh's Development

বাংলাদেশের উন্নয়নের স্বাধীন পর্যালোচনা

Recent Floods in Eastern Bangladesh

Analysis of Damages and Recovery Efforts

Dhaka: 6 October 2024

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Study Team

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Bangladesh Water Development Board (BWDB)	Bridges Division
Department of Agricultural Extension (DAE)	Department of Disaster Management (DDM)
Department of Fisheries (DoF)	Department of Livestock Services (DLS)
Export Promotion Bureau (EPB)	Health Services Division (HSD)
Local Government Engineering Department (LGED)	Ministry of Agriculture (MoA)
Ministry of Disaster Management and Relief (MoDMR)	Ministry of Fisheries And Livestock (MoFL)
Ministry of Industries (MoI)	Ministry of Primary and Mass Education (MoPME)
Ministry of Railways (MoR)	Road Transport And Highways Division (RTHD)
Secondary and Higher Education Division (SHED)	Technical and Madrasah Education Division (TMED)

The Team gratefully acknowledges the valuable support received from the BRAC officials during the field visits at the flood afflicted districts.

The Study Team alone remains responsible for the analyses, interpretations and conclusions presented in this report.

Structure of the presentation

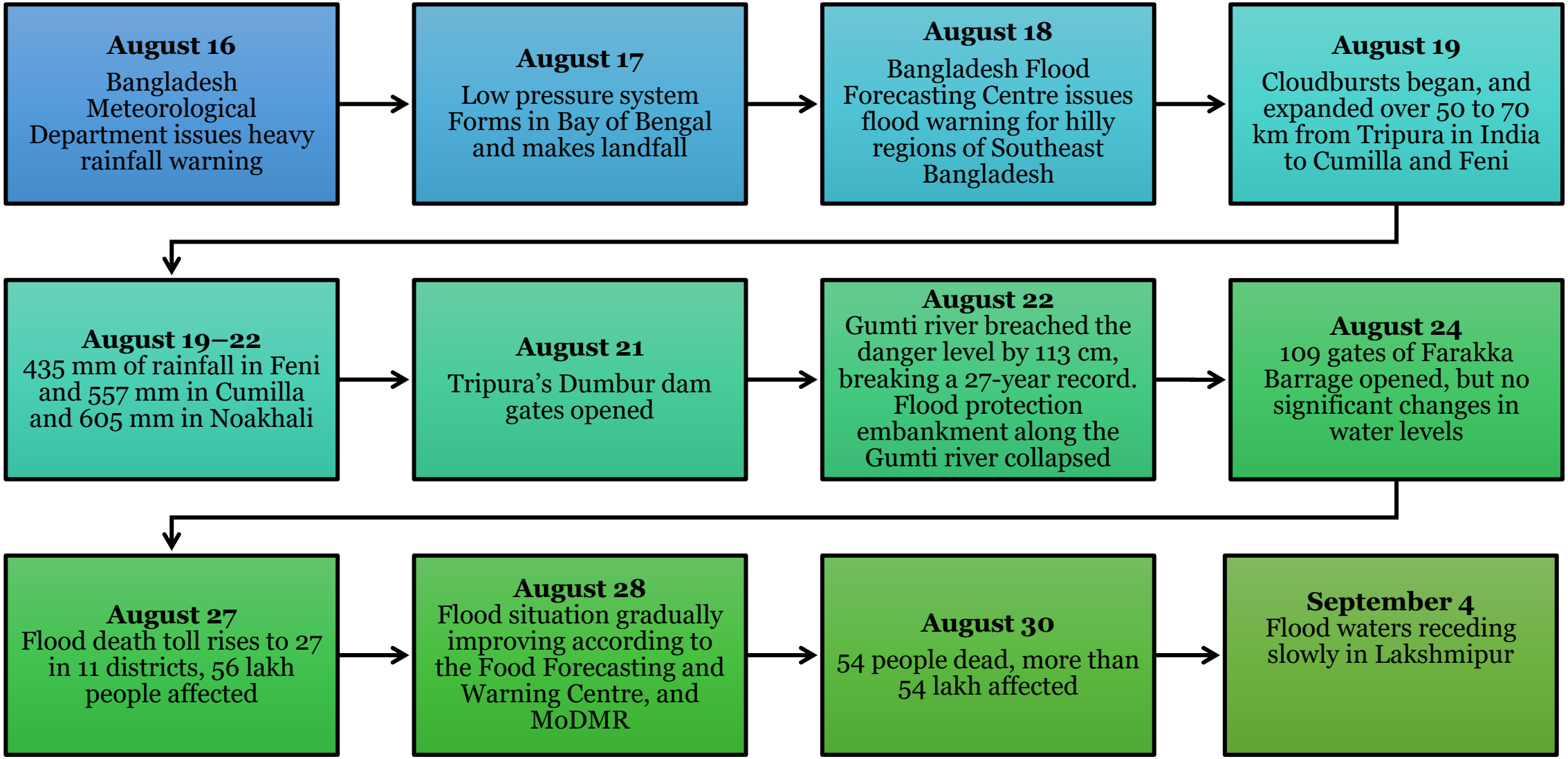
- Context
- Scope of the study
- Methodology
- Key findings
- Recommendations

Context

Context

- Bangladesh faced several major extreme weather events in 2024, leading to severe loss and damages to lives and livelihood
  - On 27 May 2024, Cyclone Remal made landfall near Bangladesh with strong winds and storm surges, causing severe damages. The cyclone affected **4.6 million people across 8 coastal districts**, including Shatkhira, Khulna, Bagerhat, Borguna, Patuakhali, Barisal, and Bhola, resulting in **a loss of USD 600 million**
  - Heavy rain triggered floods in the country from mid-June 2024, affecting communities in Sylhet, Dhaka, Mymensingh, Rangpur, and Chittagong Divisions
  - From 19 August 2024, flash floods in Bangladesh, triggered by continuous heavy rainfall and upstream water flows, have caused severe devastation to communities across 11 districts in the Eastern part of the country
    - Bangladesh's location in the lower river basin means that the water from the upper catchment areas flows into Bangladesh with high-pressure
- These extreme weather events have short and long-term effects on economy, climate resilience, and community adaptation strategies
- Against this backdrop, this study aims to evaluate the impact of recent floods in Eastern part of Bangladesh, assess the loss and damage, and provide recommendations for better flood management and disaster preparedness in the future

Chronology of events



Source: Author's compilation from various newspapers

Scope of the study

Scope of the study

❑District consideration

- To assess the damage, the study considered 11 flood affected districts of Eastern Bangladesh which include Sylhet, Moulvibazar, Habiganj, Feni, Khagrachhari, Coxsbazar, Cumilla, Noakhali, Chattogram, Lakshmipur, and Brahmanbaria

❑Sector consideration

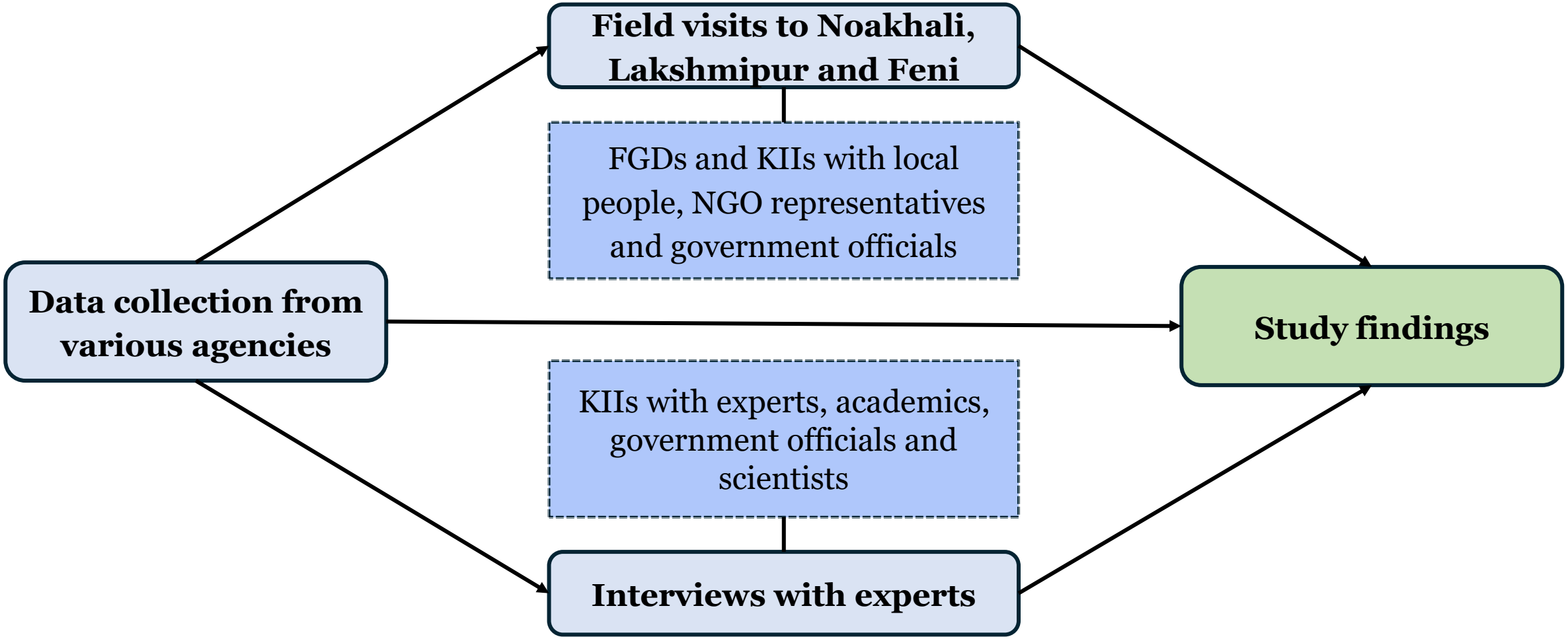
- A total of six broad sectors were considered to assess the economic damage owing to flood which include (i) agriculture and forestry, (ii) infrastructure, (iii) housing, (iv) industry, (v) healthcare, and (vi) education

❑Primary data collection

- To collect primary data through Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs), the study considered Fulgazi Upazilla in Feni; Chatkhil Upazilla in Noakhali and Kamalnagar Upazilla in Lakshmipur

Methodology

An overview of the methodology used to conduct the study



Data collection process

- To assess the flood damage, data was collected under **6 broad sectors and 17 subsectors**
  - 19 different agencies were approached, 17 of which were government and 2 were private entities
  - Data was received from 15 agencies with Ministry of Disaster Management and Relief (MoDMR) being the main source

Table: Sources of secondary data

Sector/ sub sector	Sources of information	Comments
(i) Agriculture and Forestry		
Crops	Ministry of Agriculture (MoA), Department of Agricultural Extension (DAE), Ministry of Disaster Management and Relief (MoDMR)	Data received
Fisheries	Ministry of Fisheries and Livestock (MoFL), Department of Fisheries (DoF), MoDMR	Data received
Livestock	MoFL, Department of Livestock Services (DLS), MoDMR	Data received
Poultry	Ministry of Fisheries and Livestock (MoFL), MoDMR	Data received
Forestry	MoDMR	Data received

Data collection process (contd.)

Sector/ sub sector	Sources of information	Comments
(ii) Infrastructure		
Roads	MoDMR, Local Government Engineering Department (LGED), Road Transport and Highways Division (RTHD)	RTHD only provided qualitative data
Railways	Ministry of Railways (MoR)	Data received with inadequate disaggregation
Bridges and culverts	LGED, MoDMR	Data received
Embankment	LGED, MoDMR	Data received
Electric line	MoDMR	Data received
Mobile tower	MoDMR	Data received
Religious structure	MoDMR	Data received
(iii) Housing		
Housing	MoDMR	Data received

Data collection process (contd.)

Sector/ sub sector	Sources of information	Comments
(iv) Industry		
Industry	Ministry of Industries (MoI), BGMEA, BTMA, EPB, MoDMR	No data received from MoI, BGMEA and BTMA. Only qualitative data received from EPB
(v) Healthcare		
Healthcare centres	Health Services Division (HSD), MoDMR	Data received
WASH (tubewell, sanitary latrine, waterbodies)	MoDMR	Data received
(vi) Education		
Primary education, secondary education, Madrasa and other community schools	Ministry of Primary and Mass Education (MoPME), Secondary and Higher Education Division (SHED), Technical and Madrasah Education Division (TMED), MoDMR	No data received from TMED. Other sources provided data

Data collection process (contd.)

Field visits

- Field visits were conducted in three districts: Feni, Lakshmipur and Noakhali during 22-23 September 2024

FGDs

- A total of 3 FGDs were conducted, in Fulgazi, Feni; Chatkhil, Noakhali and Kamalnagar, Lakshmipur (one in each district)
  - These upazilas were chosen based on the severity index of the Needs Assessment Working Group (NAWG)
  - Participants were flood affected people (13-16 people per FGD)

KIIs

- 12 KIIs were conduced in Feni, 10 in Lakshmipur, and 11 in Noakhali
  - In each district., KIIs were conducted with government officials [Relief and Rehabilitation Officer, Executive Engineer (LGED), Executive Engineer (DPHE), and Civil Surgeon], flood affected household heads, NGO representatives, women, farmers, small business owners, and teachers
- Additional KIIs were conducted with experts, academics, government officials and scientists

Limitations of the study

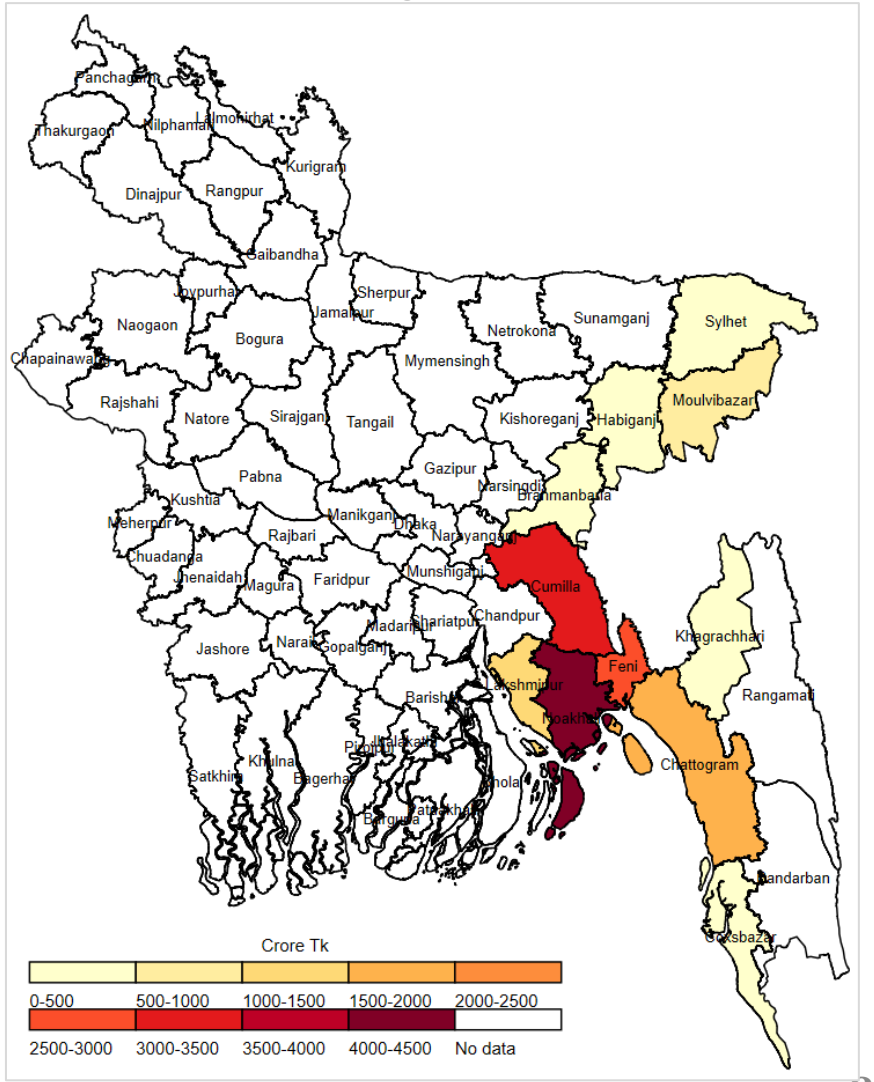
- The available data considers the damage till 5 September 2024
- In terms of sectoral data, coverage of all considered districts could not be ensured due to unavailability of data
- In the cases of education and healthcare, only infrastructural damage was considered
- Recent floods in Northern parts of Bangladesh were not considered in this study as these started later in September

Key findings

Total damage

- The **total damage** owing to recent floods in the Eastern parts of Bangladesh was at least **Tk. 14421.46 crore** (approximately USD 1.20 billion)
  - This damage is **1.81% of the national budget of FY25**
  - In terms of **share of FY24 GDP (provisional)**, the damage reaches **0.29%**
  - In terms of **share of FY25 GDP (projected)**, the damage reaches **0.26%**

Figure: Damage due to floods in Eastern Bangladesh



Sectorwise damage

- Among the six broad sectors considered for the damage assessment, **agriculture and forestry sector suffered the highest** with damage of **Tk. 5169.71 crore** - which is **35.85%** of the total damage.
- Infrastructure sector stands second in terms of damage (**Tk. 4653.92 crore** accounting for **32.27%** of total damage) followed by the housing sector (**Tk. 2407.31 crore** accounting for **16.69%** of total damage)

Table: Summary of initial flood damage estimate (as of 5th September 2024)

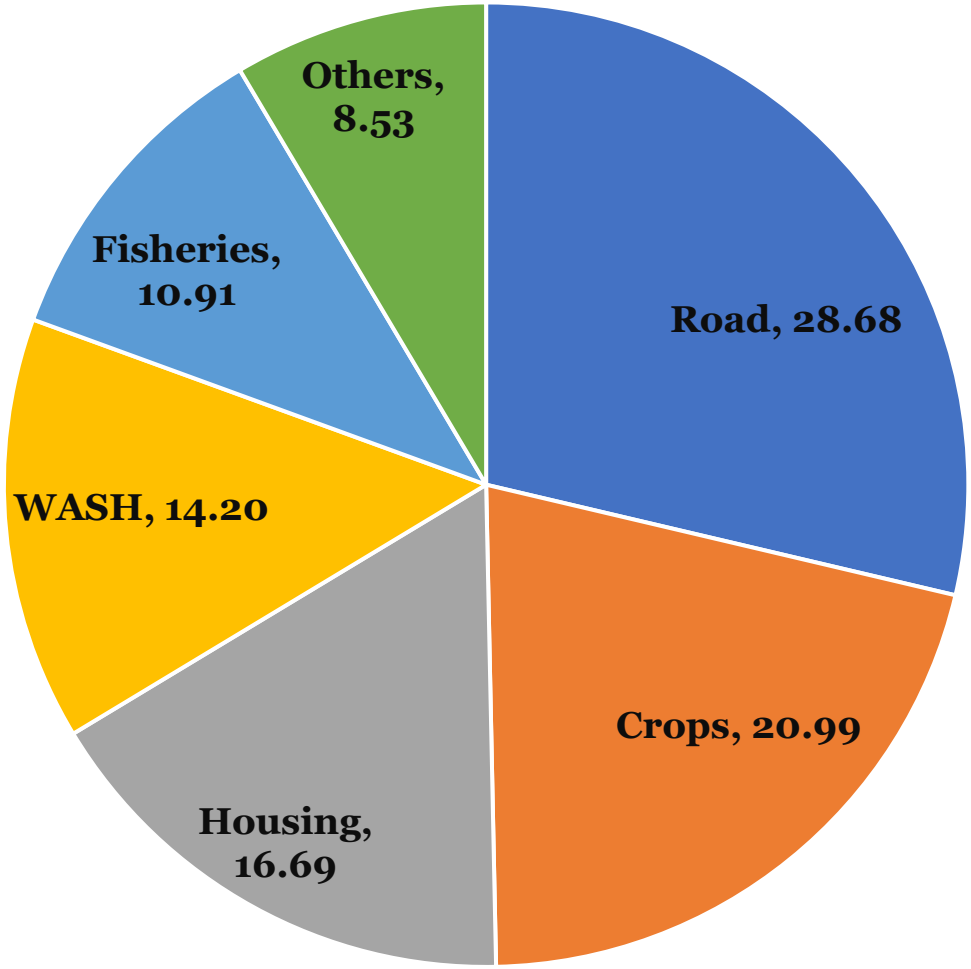
Sector	Estimated damage (in crore Tk.)	Share in total damage (in %)
Agriculture and Forestry	5,169.71	35.85
Infrastructure	4,653.92	32.27
Housing	2,407.31	16.69
Health	2,062.86	14.30
Education	89.63	0.62
Industry	38.03	0.26
Aggregate	14421.46	100.00

Source: Author's calculation from aforementioned secondary data sources

Sectorwise damage (contd.)

- If sub-sectors are considered, **roads** suffered the most damage (28.68%), followed by **crops** (21.0%), **housing** (16.69%), and **WASH facilities** (14.2%), and **fisheries** (10.9%)
  - Others (accounting for **8.53%**) includes **livestock** (2.11%) , **bridges and culverts** (1.96%), **poultry** (1.79%), **embankments** (1.09%), **education** (0.62%), **industry** (0.26%), **railway** (0.23%), **electric lines** (0.17%), **religious structures**(0.13%), **healthcare centres** (0.10%) , **forests** (0.06%) and **mobile towers** (0. 001%)

Figure: Sub-sectors affected by flood (% of total damage)



Source: Author's calculation from aforementioned secondary data sources

Districtwise damage

- The most affected districts in terms of monetary value were **Noakhali**, making up **29.07%** of the total damage, followed by **Cumilla** with **23.51%**, **Feni** with **18.61%** and **Chattogram** with **11.63%**
- The data shows that **some districts** (i,e., Noakhali, Cumilla and Feni) **have been disproportionately affected** compared to others

Table: Districtwise summary of flood damage (as of 5 September 2024)

District	Total damage (in crore Tk.)	Share of total damage (in %)
Noakhali	4191.62	29.07
Cumilla	3390.35	23.51
Feni	2683.14	18.61
Chattogram	1676.94	11.63
Lakshmipur	1403.91	9.73
Moulvibazar	506.07	3.51
Brahmanbaria	144.01	1.00
Habiganj	143.59	1.00
Khagrachhari	127.23	0.88
Coxsbazar	100.48	0.70
Sylhet	20.51	0.14

Source: Author's calculation from aforementioned secondary data sources

Districtwise damage (contd.)

- Cumilla suffered the most damage in agriculture and forestry (23.5%), and in housing (45.0%) sectors. Noakhali in infrastructure and healthcare sectors (37.6% and 39.4% respectively). Feni in the education sector (43.5%)

District	Agriculture and Forestry		Infrastructure		Housing		Healthcare		Education	
	Total Damage (Crore Tk.)	*% of sectoral damage*	*Total Damage (Crore Tk.)*	*% of sectoral damage*	*Total Damage (Crore Tk.)*	*% of sectoral damage*	*Total Damage (Crore Tk.)*	*% of sectoral damage*	*Total Damage (Crore Tk.)*	*% of sectoral damage*
Sylhet	15.0	0.3	1.7	0.0	0.7	0.0	3.1	0.2	0.0	0.0
Moulvibazar	139.8	2.7	293.0	6.3	42.4	1.8	30.3	1.5	0.5	0.6
Habiganj	44.2	0.9	75.9	1.6	19.6	0.8	3.8	0.2	0.0	0.0
Feni	1096.4	21.2	630.0	13.5	533.9	22.2	380.5	18.4	39.0	**43.5**
Khagrachhari	56.7	1.1	38.3	0.8	12.4	0.5	19.0	0.9	0.5	0.5
Coxsbazar	46.9	0.9	41.3	0.9	6.6	0.3	5.6	0.3	0.0	0.0
Cumilla	1215.4	**23.5**	652.2	14.0	1084.1	**45.0**	379.8	18.4	29.6	**33.0**
Noakhali	1133.5	21.9	1750.6	**37.6**	478.4	19.9	813.6	**39.4**	15.5	17.3
Chattogram	704.5	13.6	765.3	16.4	90.8	3.8	108.1	5.2	3.2	3.6
Lakshmipur	661.5	12.8	316.9	6.8	126.1	5.2	298.3	14.5	1.0	1.2
Brahmanbaria	55.7	1.1	55.2	1.2	12.1	0.5	20.8	1.0	0.2	0.2
Total	**5169.7**	**100.0**	**4653.9**	**100.0**	**2407.3**	**100.0**	**2062.9**	**100.0**	**89.6**	**100.0**

Source: Author's calculation from aforementioned secondary data sources

Relief distribution

Table: Districtwise relief distribution scenario

District	Total relief (in crore Tk.)	Total flood damage (in crore Tk.)	Affected people (in number)	Relief per affected people (in Tk.)	Relief: damage
Brahmanbaria	8.7	143.5	80,000	1,084.8	0.060
Chattogram	11.8	1,670.6	30,000	3,947.7	0.007
Coxsbazar	3.1	100.5	148,450	206.5	0.031
Cumilla	14.9	3,362.1	1,090,592	136.7	0.004
Feni	16.6	2,607.5	1,000,000	165.8	0.006
Habiganj	13.4	143.6	20,840	6,450.1	0.094
Khagrachhari	3.1	127.2	123,992	247.2	0.024
Lakshmipur	3.3	1,402.3	525,500	62.1	0.002
Moulvibazar	13.0	505.5	257,993	504.9	0.026
Noakhali	14.9	4,186.3	1,604,300	92.9	0.004
Sylhet	14.6	20.5	9,535	15,320.4	0.712

Source: Author's compilation and calculation from MoDMR data
Note: Total relief includes relief (cash), relief (rice), baby food and cattle feed

- **Examination of relief per affected people and relief-damage ratio reveals some curious numbers!**
  - Whether it is a data reporting issue remains a concern

Observations from field visits

Damages observed

❑Impact on housing

- ➢ Housing was severely impacted, particularly mud houses were completely destroyed

❑Impact on agriculture

- ➢ There was a huge loss of rice crops
- ➢ Fisheries sector was severely affected, with local people reporting between 85% to 95 % fish lost
  - ▪ The affected waterbodies require considerable reinvestment before cultivation becomes possible again
- ➢ Poultry sector, particularly chicken farming businesses, suffered a significant loss
- ➢ The entrepreneurs lost nearly all investments in fisheries and agriculture

❑Impact on small businesses

- ➢ Small businesses were affected heavily, especially grocery shops. They had to close down for extended periods and incur losses

Observations from field visits (contd.)

Damages observed (contd.)

❑Impact on infrastructure

- Communications systems had completely broken down for the first few days of the flood
- While water level has receded, waterlogging still persisting in parts of Noakhali and Lakshmipur
- Roads, especially unpaved ones, were severely damaged
- Bridges and culverts were damaged considerably
- Electricity and internet access was disrupted heavily

❑Impact on education

- Schools and colleges with offices and laboratories on the ground floor have had their equipment destroyed
  - Use of educational institutions as shelters has contributed to disruptions in learning in some cases
  - Many children cannot return to education as their homes have been destroyed

❑Impact on WASH

- A significant number of tube wells and sanitary latrines were damaged, affecting access to clean water and sanitation

Observations from field visits (contd.)

Coping mechanisms

❑Relief and distribution

- There was a lack of coordination among the stakeholders for relief distribution
  - This led to some people getting aid a few times, and some people not getting any
  - Some of the local people mentioned lack of elected representatives as a cause of miscoordination. However, some also mentioned that the relief distribution was more fair because of this
- Some remote areas were inaccessible due to a lack of flat-bottomed boats
- In some cases, cash relief was not useful since necessary goods were unavailable or not sold at all
- The absence of any type of radio communication system created a huge coordination problem amongst the local administrative offices
- Inadequate government personnel was also cited as a problematic factor for relief distribution

❑Infrastructure

- In some cases, LGED constructed bamboo and diversion bridges where bridges and culverts were destroyed

Observations from field visits (contd.)

Coping mechanisms (contd.)

❑Health

- ➢ Medical teams and flood response teams were formed in some instances involving government, NGO and development partners' representatives

❑WASH

- ➢ Government, NGOs, private entities, and development partners provided water purification tablets and systems in some areas

❑Housing

- ➢ Since flood is uncommon in the visited areas, many people were completely unprepared and lost most of their belongings
- ➢ Educational institutions were a common source of shelter for the affected

Observations from field visits (contd.)

Health impacts

- Skin diseases owing to waterlogging, and diarrhoea were the most cited health problems by the local people
- Shortage of emergency medicine was prevalent during the early phases of the flood
- A spike in the number of snake bit patients was observed in Lakshmipur during the early phases

Recommendations

Recommendations

❑Increasing budgetary allocation

- ➢ The government should increase the budget allocation earmarked for relief distribution, especially considering that frequency and intensity of floods and cyclones are projected to increase
- ➢ Social safety net allocations, particularly those for old age citizens, widows and destitute women, can be increased after careful assessment to subside the impact of flood in affected areas

❑Ensuring easy access to finance and providing debt relief

- ➢ The government needs to ensure easy access to agricultural loans for farmers
- ➢ A significant number of small businesses have been affected – many of which have taken loans from microfinance organisations. In view of the current scenario, moratorium on loan repayment and expansion of repayment period could be considered

❑Ensuring adequate supply of seeds

- ➢ Seed beds have suffered considerable damages owing to the flood. So, adequate supply of seeds will have to be ensured so that next season's Aman cultivation is not hampered

Recommendations (contd.)

❑Curtailing the impact on food security

- ➢ The extensive damage to the agricultural sector is likely to have an impact on food security, and thus, keeping inflation in control will be a big challenge
  - The government should take immediate preparations towards rice import and reduce the import duties of agricultural inputs and commodities

❑Improving the emergency response systems

- ➢ Radio communication systems between administrative offices in Bangladesh should be set up for situations where mobile networks are disrupted
- ➢ Sufficient ambulatory boats for emergencies in flood affected areas need to be ensured
- ➢ Effective coordination among various stakeholders is required for rapid emergency response before and during flood period
  - Coordination between the Meteorological Department, Flood Forecasting and Warning Centre, MoDMR, and local government units such as Union Parishad need to be strengthened

Recommendations (contd.)

❑Improving the data collection and sharing system

- ➢ There should be real time data sharing so as to increase coordination between different government offices
- ➢ Enhancing weather data sharing with neighbouring countries is crucial
- ➢ Electronic records need to be kept and made accessible by all government offices all over Bangladesh

❑Enhancing the capacity of government relief offices

- ➢ Ensuring adequate personnel in these offices is a must
- ➢ Adequate training of the relief officers is necessary
- ➢ Coordination among relevant government agencies for ensuring efficiency and accountability in relief distribution is required

Recommendations (contd.)

❑Repairing and strengthening of embankments

- A hydromorphological study is urgently needed to assess the sufficiency of waterways, culverts and drainage systems, and necessary repairs to embankments must be made
- Mud embankments should be replaced with higher-quality materials to improve their durability and effectiveness. Also, the height of the embankments needs to be increased. Currently, embankments in coastal areas are 15 feet high, experts have suggested that the height be increased to 21 feet. The government must increase budget allocations to this end

❑Improving forecasting and early warning systems

- Upgrading flood forecasting systems, especially to be better able to predict flash floods is critical
  - Real-time satellite data should be integrated into forecasting models for better accuracy
- The local level offices, e.g. UNO, local MoDMR, need to check forecasts every day and prepare for any emergencies
- The government should assign adequate human resources for the Flood Forecasting and Warning Centre

Recommendations (contd.)

❑Maximising the reach of issued warnings

- The local government officials need to translate complex danger signals (e.g., "10 cm above danger level") into simple, actionable terms that the public can understand
- The government needs to provide emergency alerts through SMSs to all people in areas where a flood or extreme rainfall has been predicted
- All TV channels should provide weather forecasts

❑Raising awareness of local citizens

- Local government along with local communities should take some initiatives to make local citizens more aware of measures that can reduce flood damage
  - Awareness campaigns can be conducted on cost-effective measures that can be taken to reduce damage and what hotline numbers to call in case of emergencies

Recommendations (contd.)

❑Performing nationwide hazard assessments

- In the long run, the government should perform nationwide hazard assessments, particularly for development planning
  - Implement proper planning and construction of infrastructures like roads, culverts and bridges to ensure that floodwater can flow naturally, reducing the chances of waterlogging and severe flooding
  - Develop a comprehensive land-use plan, designating areas for urban development, agriculture, and other uses to mitigate flood risks
  - Recover occupied canals and rivers to restore natural drainage systems and prevent blockages during excessive rainfall
  - Ensure that future development projects are prepared for increased rainfall and more frequent flooding due to climate change
  - Improve water infiltration methods in urban areas by creating more open spaces and reducing reliance on costly water pumping systems

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