HEAVY RAINFALL IN BANGLADESH IN 2025

Impacts on Livelihoods, Economy, Health, Agriculture and Other Climate-Sensitive Sectors

Special Focus on Khulna and Southwestern Bangladesh

Research conducted by

An Organization for Socio-Economic Development (AOSED)

in collaboration with

Climate Justice Forum Bangladesh

Khulna, Bangladesh
July 2026

A desk-based research synthesis of official meteorological records, government and humanitarian information, peer-reviewed research, and verified contemporary reporting.

Publication Information

This report was prepared by An Organization for Socio-Economic Development (AOSED) in collaboration with Climate Justice Forum Bangladesh. It consolidates publicly available evidence on heavy rainfall and associated waterlogging and flooding during 2025, with a geographic emphasis on Khulna Division and the wider southwestern delta.

Citation suggestion

AOSED and Climate Justice Forum Bangladesh. (2026). Heavy Rainfall in Bangladesh in 2025: Impacts on Livelihoods, Economy, Health, Agriculture and Other Climate-Sensitive Sectors, with Special Focus on Khulna and Southwestern Bangladesh. Khulna: AOSED.

The report is intended for policy dialogue, programme design, advocacy, climate-risk management and further field research. Figures reported by public agencies and news outlets are presented with their original geographic and temporal scope. They should not be interpreted as a complete regional damage and loss assessment.

The analysis distinguishes between: (i) verified 2025 meteorological and impact observations; (ii) post-season evidence describing the continuing consequences of 2025 monsoon waterlogging; and (iii) established research used to explain underlying risk pathways.

Acronyms

Acronym	Meaning
AOSED	An Organization for Socio-Economic Development
BMD	Bangladesh Meteorological Department
BWDB	Bangladesh Water Development Board
CJF	Climate Justice Forum
DAE	Department of Agricultural Extension
DGHS	Directorate General of Health Services
DoF	Department of Fisheries
FFWC	Flood Forecasting and Warning Centre
KCC	Khulna City Corporation
TRM	Tidal River Management
WASH	Water, sanitation and hygiene

Table of Contents

Section	Page
Executive Summary	4
1. Introduction	5
2. Methodology and Evidence Framework	6
3. Bangladesh Rainfall Profile in 2025	7
4. Why Heavy Rain Produces Disproportionate Losses in the Southwest	9
5. Impacts on Livelihoods and Employment	10
6. Economic Impacts	10
7. Agriculture and Food Security	11
8. Fisheries and Aquaculture	12
9. Livestock and Poultry	14
10. Health, Water, Sanitation and Hygiene	14
11. Urban Infrastructure, Housing and Essential Services	15
12. Education and Public Institutions	15
13. Gender, Poverty and Social Inclusion	15
14. Environmental and Ecosystem Impacts	16
15. Focused Case Studies	16
16. Preparedness and Response Assessment	17
17. Recommendations	18
18. Proposed Monitoring Framework	19
19. Research and Data Gaps	19
20. Conclusion	20
References	20
Appendices	21

Executive Summary

Bangladesh experienced a sequence of heavy-rainfall and waterlogging episodes during 2025. The year did not follow a simple pattern of uniformly high monsoon rainfall. National rainfall was 62.9 percent above normal in May, 19.3 percent below normal in June, and 23.5 percent above normal in July. These alternating wet and dry anomalies were accompanied by repeated low-pressure systems, depressions and active monsoon conditions. The result was highly concentrated rainfall capable of overwhelming urban drainage, submerging cropland, flooding fish ponds and shrimp enclosures, and prolonging waterlogging in the southwest [1–3].

Khulna and southwestern Bangladesh experienced several notable episodes. Khulna recorded 83 mm of rainfall in 24 hours on 16–17 June, described locally as the highest rainfall of the year to that date. A later low-pressure system produced 138 mm in Khulna between 6:00 a.m. on 8 July and 6:00 p.m. on 9 July. Satkhira recorded 129 mm on 4 July and 100 mm in the 24 hours ending at midnight on 14 July [4–6].

The observed impacts were multidimensional. In Khulna city, roads, alleys, ground floors of homes and shops were inundated, transport became scarce, and some rickshaw fares reportedly doubled. In Paikgachha, Koyra and Dacope, heavy rain affected public offices, educational institutions, residential areas, roads, nurseries, vegetable fields and aquaculture facilities. Departmental information cited in local reporting indicated that about 2,850 shrimp enclosures and more than 900 ponds were flooded in Paikgachha; 82 hectares of Aman seedbeds, 115 hectares of vegetables, 18 hectares of green chilli and 2 hectares of off-season watermelon were affected. Across the reported Khulna event, more than 200 hectares of cropland were damaged, with an estimated crop loss of about Tk 4.5 crore [5].

In Satkhira, thousands of families were reported trapped by water, with cooking disrupted and clean-water shortages emerging. About 162 hectares of Aus paddy, 106 hectares of Aman seedbeds and 44 hectares of leafy vegetables were affected, with estimated agricultural losses of approximately Tk 1.5 crore. Numerous ponds and shrimp enclosures overflowed or merged with canals and rivers, but a comprehensive aquaculture loss valuation was not published [6].

Taken together, the two quantified agricultural assessments identify at least Tk 6 crore in crop losses from specific reported events in Khulna and Satkhira. This is a partial floor, not a regional total. It excludes unvalued aquaculture losses, household damage, transport disruption, lost work, education interruption, drainage and embankment repair, health costs and the long-duration effects of waterlogging.

Post-season reporting demonstrates that 2025 monsoon impacts persisted. In the Bhabadah basin of Jashore and Khulna, excessive rainfall during July and August 2025 reportedly inundated more than 150 villages and affected over 200,000 people. By the 2026 Boro season, prolonged waterlogging had left more than 17,800 hectares fallow and more than 25,000 farmers unable to cultivate Boro, showing how a rainfall event can become a multi-season livelihood and food-security crisis [9].

Heavy rain also contributed to a national public-health risk environment. By 6 October 2025, Bangladesh had reported 50,689 dengue cases and 215 deaths. Experts linked the worsening outbreak to erratic rainfall, an extended mosquito-breeding season and weak control of standing water. This does not establish that every case was caused by a particular rainfall episode, but it demonstrates the health consequences of persistent wet conditions and urban water stagnation [11].

Central conclusion

The southwest's 2025 rainfall impacts were not produced by rainfall alone. Intense precipitation interacted with silted rivers, blocked canals and culverts, unfinished drainage works, land filling, weak embankments, high tides, saline water, poverty and dependence on agriculture and aquaculture. Heavy rain therefore functioned as a trigger within a structurally vulnerable delta system.

Key Statistical Findings

Indicator	Reported value	Geographic/temporal scope
National rainfall deviation, May 2025	+62.9%	Bangladesh
National rainfall deviation, June 2025	−19.3%	Bangladesh
Khulna Division rainfall, June 2025	313 mm; +6.0% above normal	Khulna Division
National rainfall deviation, July 2025	+23.5%	Bangladesh
Khulna rainfall, 16–17 June	83 mm in 24 hours	Khulna city
Khulna rainfall, 8–9 July	138 mm in 36 hours	Khulna
Satkhira rainfall, 4 July	129 mm in 24 hours	Satkhira
Satkhira rainfall, 14 July	100 mm in 24 hours	Satkhira
Paikgachha aquaculture assets affected	~2,850 enclosures; >900 ponds	Paikgachha, Khulna
Reported crop damage value	Tk 4.5 crore	Khulna event
Reported crop damage value	Tk 1.5 crore	Satkhira event
Bhabadah villages and people affected	>150 villages; >200,000 people	2025 monsoon; reported post-season
Bhabadah Boro cultivation impact	>25,000 farmers; >17,800 ha fallow	2026 Boro season following 2025 monsoon
Dengue burden by 6 October	50,689 cases; 215 deaths	Bangladesh

1. Introduction

Heavy rainfall is a recurring feature of Bangladesh's monsoon climate, but the hazard becomes a disaster when rainfall intensity exceeds drainage capacity, river levels remain high, embankments fail, or homes and livelihoods are located in low-lying areas. In southwestern Bangladesh, these processes are intensified by tidal dynamics, river siltation, subsidence within polders, salinity, canal encroachment and long-standing drainage constraints.

The 2025 season is important because it combined national-scale monsoon disturbances with highly localized urban and rural impacts. The most consequential losses in Khulna and Satkhira were associated not only with direct flooding but also with prolonged water retention. Roads could become passable within days, while fields and beels remained submerged for months. This difference is central to understanding livelihood and economic damage.

1.1 Objectives

- To document the timing and intensity of major 2025 heavy-rainfall events in Bangladesh and the southwest.
- To analyse impacts on livelihoods, income, agriculture, aquaculture, livestock, health, WASH, education, infrastructure, gender equality and ecosystems.
- To identify why rainfall produces recurrent and unequal losses in Khulna, Satkhira, Jashore and adjoining districts.

- To provide practical recommendations for government, local authorities, civil society, donors and community platforms.

1.2 Geographic scope

The core study area is Khulna Division and the southwestern delta, with particular attention to Khulna city and district, Satkhira, Jashore, Bagerhat, Narail, Chuadanga, Meherpur, Jhenaidah and Kushtia. Coastal upazilas such as Koyra, Dacope, Paikgachha, Shyamnagar, Assasuni and Kaliganj receive special attention because rainfall impacts interact with tidal water, salinity and embankment risk.

2. Methodology and Evidence Framework

This is a desk-based synthesis. It uses official BMD long-range climate assessments, government and departmental figures reported in verified news coverage, humanitarian situation reports, peer-reviewed research and post-season documentation. The research did not include household surveys, remote-sensing classification or independent field verification.

Evidence tier	Definition	How used
Tier 1: Direct 2025 observation	Official rainfall records, dated event reports and agency estimates	Primary evidence for event chronology and quantified impacts
Tier 2: Post-season 2025 consequence	Evidence published later but explicitly describing impacts originating in the 2025 monsoon	Used to assess persistence and multi-season effects
Tier 3: Structural/context evidence	Peer-reviewed and institutional research on waterlogging, drainage and health pathways	Used to explain mechanisms, not to claim additional 2025 losses

Important limitation

No comprehensive public damage-and-loss assessment was identified for all of Khulna Division in 2025. The monetary figures in this report are event-specific and sector-specific. They cannot be added to produce a complete regional economic loss without avoiding double counting and filling major data gaps.

3. Bangladesh Rainfall Profile in 2025

BMD reported a highly variable sequence. May rainfall was 62.9 percent above normal, supported by several low-pressure systems and a deep depression that crossed the West Bengal–Bangladesh coast on 29 May. June, by contrast, recorded national rainfall 19.3 percent below normal, although Khulna Division received 313 mm, 6 percent above its normal 296 mm, over an average of 20 rainy days. July then shifted back to above-normal conditions nationally, at 23.5 percent above normal, with multiple low-pressure systems and depressions producing heavy to very heavy rainfall [1–3].

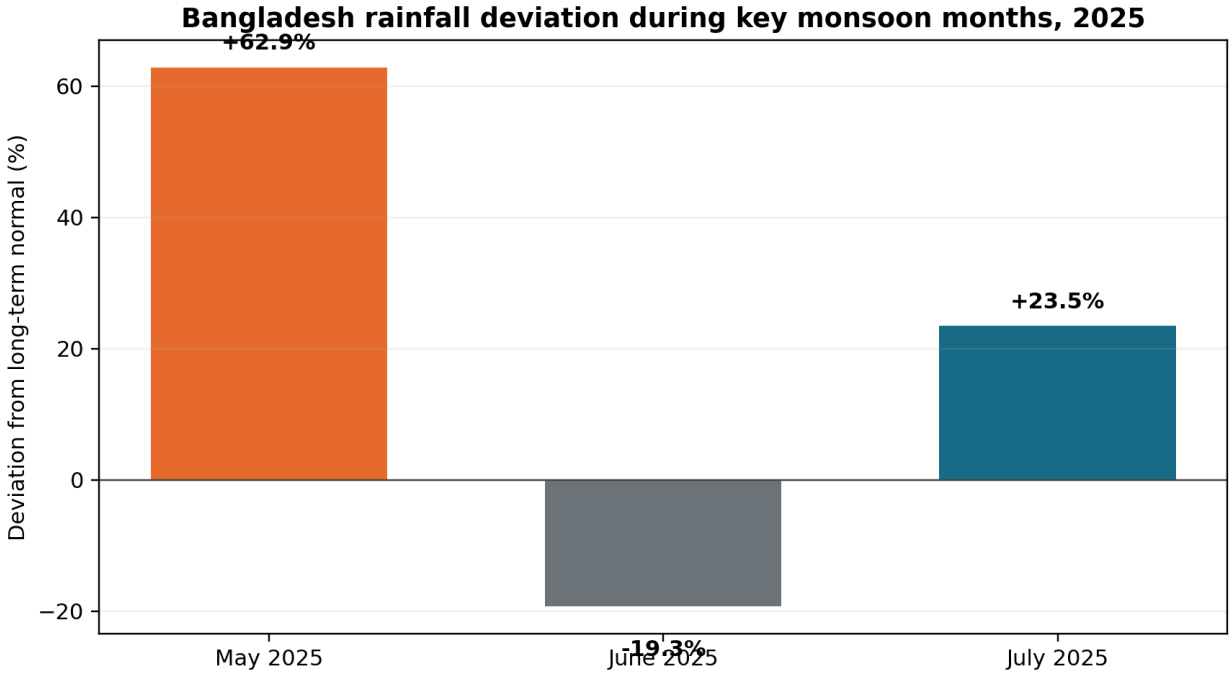

Figure 1. National rainfall deviation during May–July 2025.

Source: Bangladesh Meteorological Department long-range weather assessments [1–3].

The national monthly totals conceal the most damaging aspect of the season: rainfall concentration. A month can be below normal overall while still containing one or more intense local events. For disaster management, daily and sub-daily intensity, duration, antecedent soil saturation, tidal level and drainage condition are often more consequential than the monthly average.

3.1 Selected southwestern rainfall events

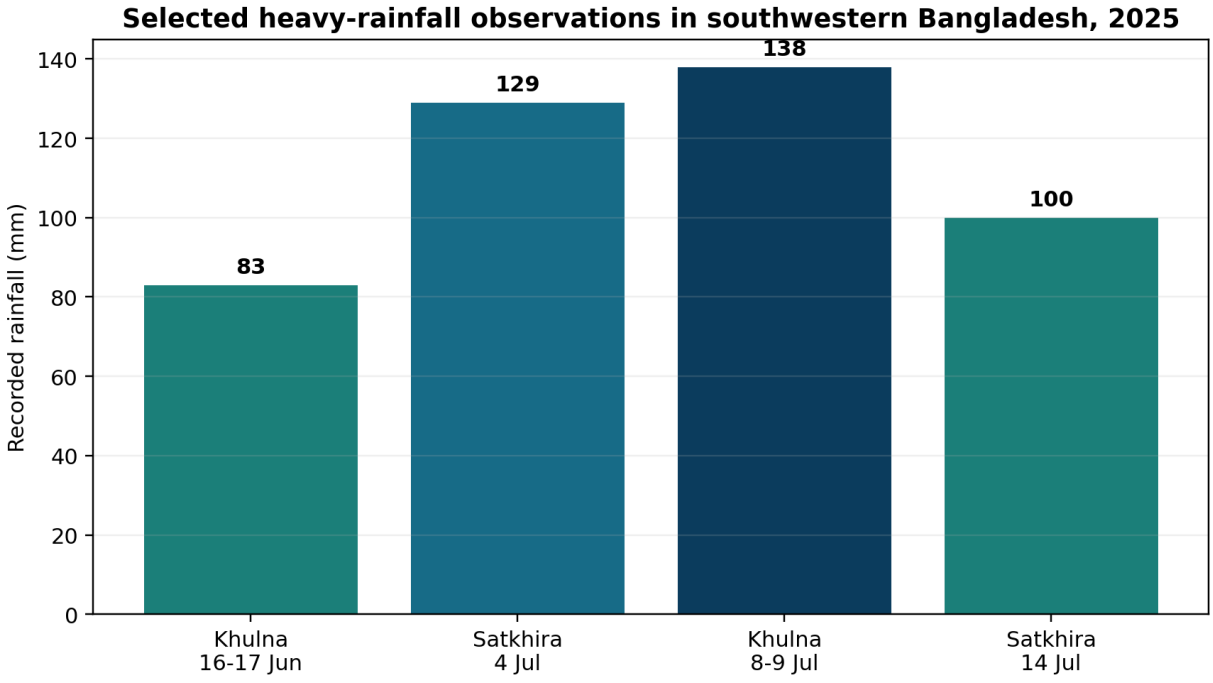

Figure 2. Selected reported rainfall totals in Khulna and Satkhira.

Source: BSS and Dhaka Tribune, citing local meteorological offices [4–6]. Different observation windows apply.

Date/period	Location	Rainfall	Reported consequences
16–17 June	Khulna	83 mm/24 hours	Widespread road and neighbourhood waterlogging; homes and shops inundated; traffic disruption
4 July	Satkhira	129 mm/24 hours	Season's highest reported local rainfall; low-lying areas inundated
8–9 July	Khulna	138 mm/36 hours	Urban waterlogging; crop and aquaculture impacts in Paikgachha, Koyra and Dacope
14 July	Satkhira	100 mm/24 hours	Thousands of families trapped; crop and fish losses; food and clean-water stress

4. Why Heavy Rain Produces Disproportionate Losses in the Southwest

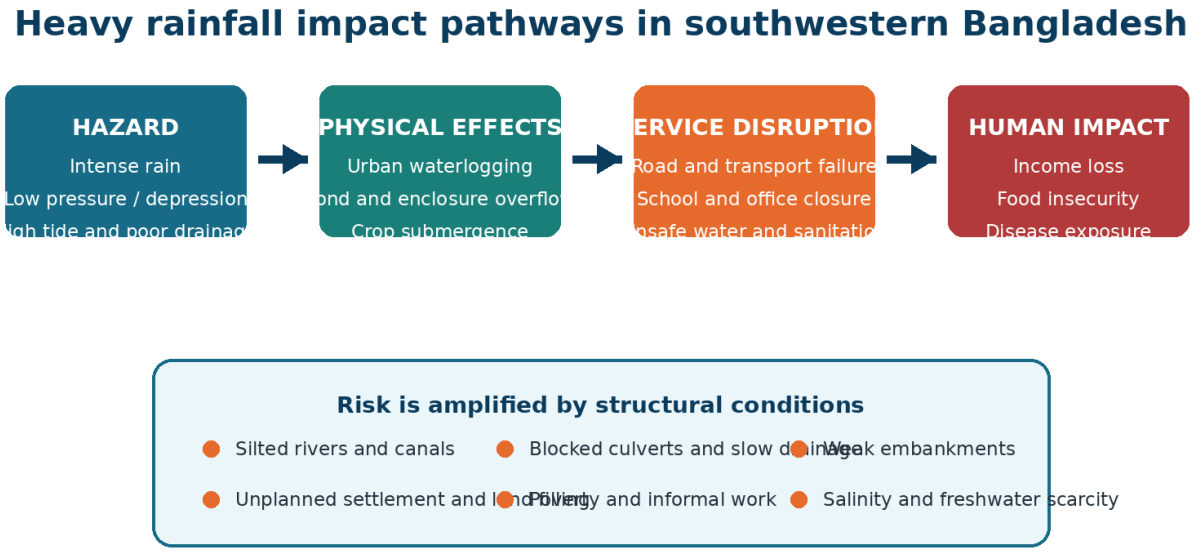

Figure 3. Heavy rainfall impact pathways in southwestern Bangladesh.

The southwest is a low-gradient tidal delta. Rainwater can leave an area only when canals, sluices and rivers have sufficient capacity and when outside river levels permit drainage. Where riverbeds are raised by sediment, canals are filled or blocked, and high tide prevents gravity drainage, rainfall remains trapped inside polders and low-lying basins.

A Springer synthesis characterizes waterlogging as a long-duration, slow-onset disaster affecting parts of the southwest for two to six months annually over several decades. It identifies polderization, declining upstream river flow, hydro-morphological change, river siltation, encroachment, illegal structures and unplanned aquaculture as major drivers. More than one million people are seriously affected in a typical year across the broader southwestern region [10].

The risk is therefore compound. Heavy rainfall coincides with tidal surges, saline-water intrusion, weak embankments, congested urban drainage and low household capacity to absorb income shocks. Climate change can intensify the system through heavier precipitation, sea-level rise and increasing drainage congestion.

4.1 Embankment and tidal risk

In May 2025, around 300 metres of embankment under Polder 13–14/2 in Koyra reportedly collapsed at five points, placing at least 15,000 people at immediate risk. BWDB sources cited at least 20 highly vulnerable points in Koyra and reported that approximately 15 km of 365.24 km of embankment in one Khulna division zone, and 20 km of 630 km across Koyra, Dacope, Paikgachha and Batiaghata, were at risk of collapse [8]. Heavy rainfall was not the only cause, but weak embankments increased the consequences of high water and storm conditions.

5. Impacts on Livelihoods and Employment

Livelihood effects occurred through three channels: inability to work during rainfall, physical loss of productive assets, and prolonged loss of access to land, water bodies or markets. Informal workers were particularly exposed because they usually lack paid leave, insurance or alternative income.

- Transport workers lost operating time when roads were submerged and motors or batteries risked damage. During the June Khulna event, available rickshaws reportedly charged Tk 60–70 for trips that normally cost Tk 30, indicating both scarcity and increased operating risk [4].
- Street vendors, small shops and market traders experienced reduced customer movement, inventory exposure and cleaning costs when shop floors and market access roads were flooded.
- Farm households lost labour days during submergence and faced later costs for re-sowing seedbeds, purchasing seedlings, repairing field boundaries and restoring soil conditions.
- Fish and shrimp farmers lost stocked fish when ponds and enclosures overflowed or connected with canals and rivers. Boundary loss also created disputes and uncertainty about ownership and recovery.
- Women experienced additional unpaid care, water collection, food preparation and cleaning burdens while also participating in agricultural, livestock and home-based income activities.

The Bhabadah evidence demonstrates the longest livelihood pathway. When fields remain inundated beyond the Aman season and into the Boro planting window, households lose two consecutive crop opportunities. In 2026, farmers described dependence on fishing, vegetable sales or asset-based coping after failing to grow either Aman or Boro following the 2025 monsoon [9].

6. Economic Impacts

A complete regional economic estimate is not available. Nevertheless, verified event reports show direct crop losses of about Tk 4.5 crore in Khulna and Tk 1.5 crore in Satkhira. The combined Tk 6 crore is a minimum quantified agricultural loss across the two reported assessments. It excludes the value of fish and shrimp swept away, housing damage, lost wages, transport disruption, business interruption, health expenditure and public repair costs [5–6].

Economic channel	Observed or likely effect	Evidence status
Agricultural output	Crop submergence, seedbed loss and replanting costs	Directly reported and partly valued
Aquaculture	Fish escape, pond and enclosure damage, feed loss, emergency harvesting	Directly reported; largely unvalued
Daily labour and transport	Lost work hours, vehicle damage risk, higher fares and reduced passenger movement	Directly observed; not comprehensively valued
Households and shops	Water entry, cleaning, repair, spoiled goods and appliance damage	Directly reported; unvalued
Public infrastructure	Drain clearance, road repair, embankment stabilization and pumping	Reported needs and ongoing works; no event total
Health and WASH	Treatment costs, safe-water purchase, vector control and	Risk documented; no southwest

Economic channel	Observed or likely effect	Evidence status
	sanitation restoration	event total

Economic loss is not limited to destroyed assets. A missed crop season is a flow loss that affects future consumption, debt and investment. Prolonged waterlogging can also depress land value, increase migration, reduce demand for agricultural labour and shift households toward insecure work.

7. Agriculture and Food Security

Heavy rainfall affected crops through physical submergence, seedbed damage, water stagnation, nutrient loss, root disease, delayed land preparation and restricted access. The timing was especially damaging for Aman seedbeds and transplanted Aman, while vegetables and chilli were vulnerable to short-duration waterlogging.

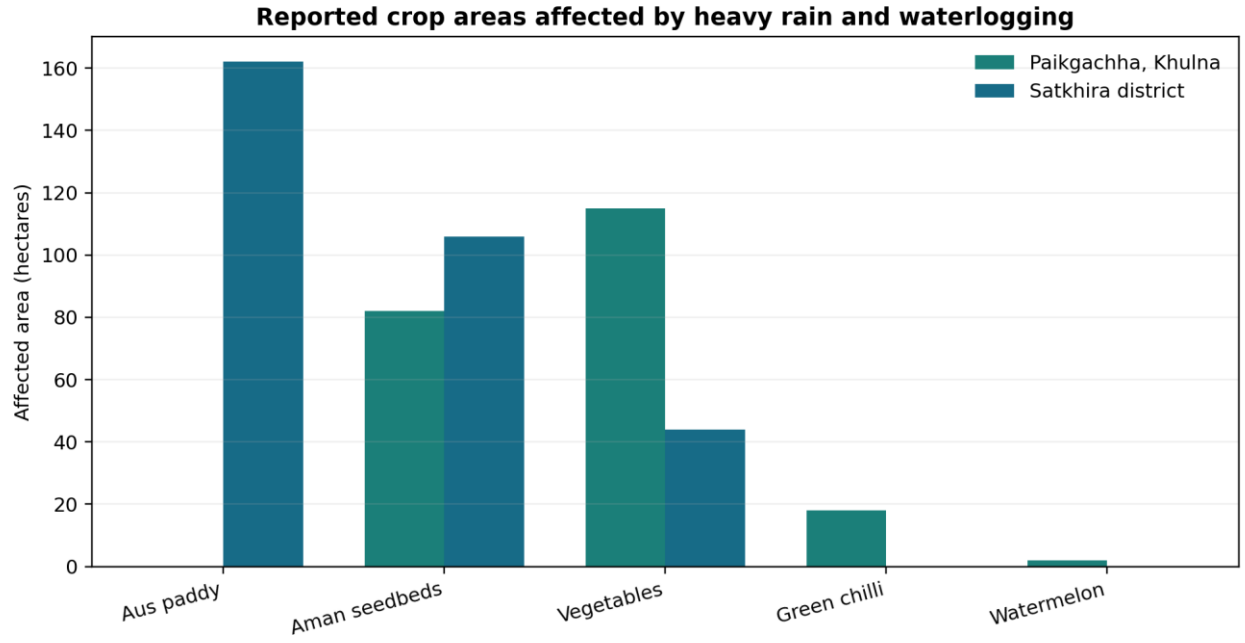

Figure 4. Reported crop areas affected in Paikgachha and Satkhira.

Source: Department of Agriculture figures reported by BSS and Dhaka Tribune [5–6].

In Paikgachha, the reported affected area included 82 hectares of Aman seedbeds, 115 hectares of vegetables, 18 hectares of green chilli and 2 hectares of off-season watermelon. In Satkhira, the assessment covered 162 hectares of Aus paddy, 106 hectares of Aman seedbeds and 44 hectares of leafy vegetables. These figures are snapshots and may not capture damage that emerged after prolonged inundation.

The food-security consequences extend beyond market output. Smallholder families often retain rice for household consumption. When both Aman and Boro cultivation fail, the family shifts from producer to buyer, increasing exposure to food-price changes and debt. The Bhabadah case shows that drainage delays can convert a seasonal production loss into a year-round nutrition and livelihood problem.

7.1 Bhabadah: multi-season agricultural disruption

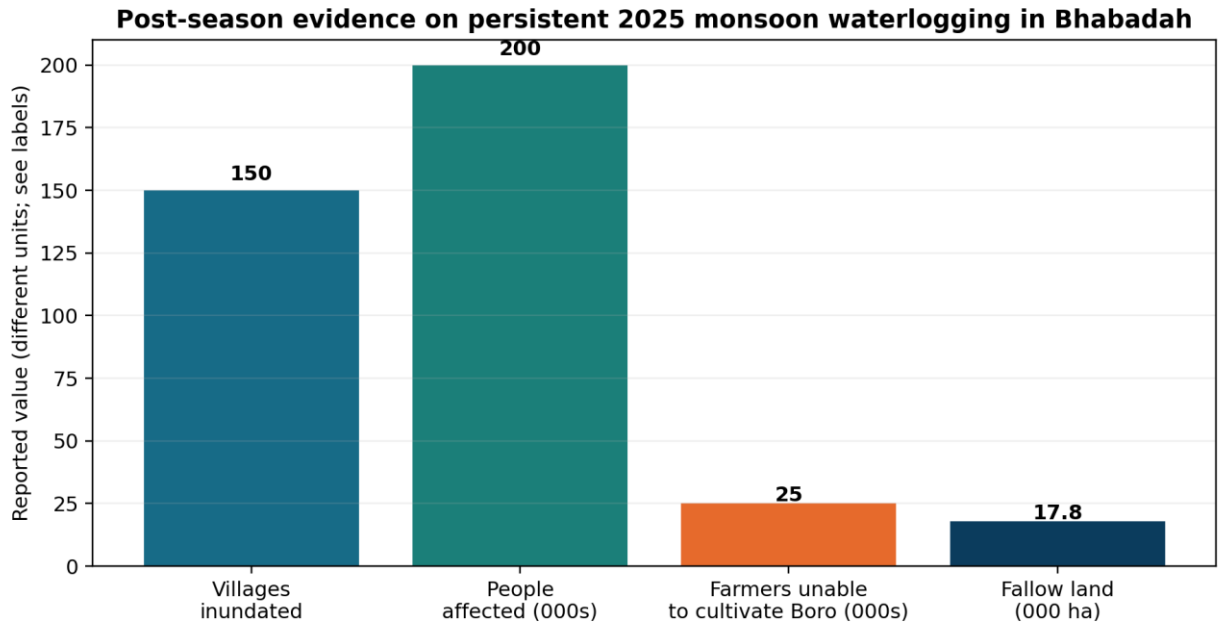

Figure 5. Post-season evidence on the continuing effects of 2025 monsoon waterlogging in Bhabadah.

Source: The Daily Star, 1 May 2026, reporting DAE and local evidence relating to the 2025 monsoon [9].

The Bhabadah basin spans parts of Abhaynagar, Monirampur and Keshabpur in Jashore and Dumuria and Phultala in Khulna. The basin includes at least 52 interconnected beels. Reporting based on DAE information indicated 35,531 hectares of cultivable land and approximately 50,000 farmers. In the 2026 Boro season, only about 17,650 hectares were cultivated, leaving more than 17,800 hectares fallow because water had not drained after the 2025 monsoon [9].

The case demonstrates a critical policy issue: emergency response measured only during the rainfall event will miss the largest agricultural losses. Monitoring must continue until land becomes cultivable again and should cover the next planting window.

8. Fisheries and Aquaculture

Aquaculture is central to the southwestern economy. Heavy rain can reduce salinity, which may temporarily benefit some freshwater systems, but extreme inflow can overtop pond and enclosure boundaries, allow stocked fish and shrimp to escape, introduce disease and contaminants, and damage embankments, nets, feed stores and access roads.

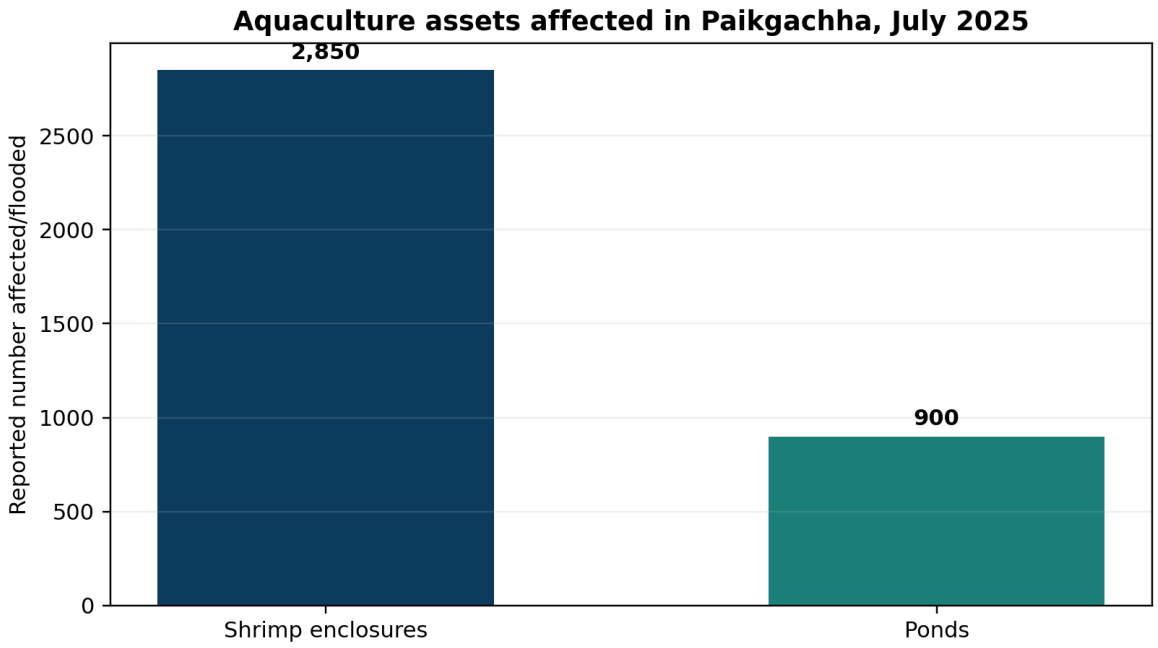

Figure 6. Reported aquaculture assets affected in Paikgachha during July 2025.

Source: Senior Fisheries Officer and departmental figures reported by BSS [5].

In Paikgachha, around 2,850 shrimp enclosures and more than 900 ponds were reported flooded. Across the wider Khulna event, departmental information referred to more than 3,000 shrimp enclosures and around 1,000 ponds affected. Local reports also described more than 100 enclosures as washed away in Koyra, Dacope and Paikgachha. These descriptions are not identical: flooding may be reversible, while washing away implies boundary failure and stock loss. The report therefore treats the figures as affected assets rather than confirmed total destruction [5].

In Satkhira, hundreds of ponds and shrimp enclosures reportedly merged with canals and rivers. Farmers described fish being swept away and individual losses of several lakh taka, but no comprehensive district valuation was available [6].

Risk mechanism	Operational consequence	Priority measure
Overtopping and boundary failure	Stock escapes and enclosures merge with canals	Raise and reinforce dykes; emergency netting at outlets
Rapid freshwater inflow	Sudden salinity and water-quality change	Monitor salinity, pH and dissolved oxygen
Contaminated runoff	Disease and food-safety risks	Separate waste drainage; post-event health checks
Feed and equipment exposure	Spoilage and replacement cost	Elevated waterproof storage
Road and market disruption	Delayed input supply and fish sales	Contingency transport and coordinated harvesting

9. Livestock and Poultry

Published 2025 event reports from the southwest provided limited livestock loss statistics. The main pathways were wet and contaminated sheds, fodder scarcity, livestock disease, difficulty accessing

veterinary services and reduced market movement. Prolonged waterlogging also reduces access to grass and straw. In Bhabadah, households reported difficulty feeding cattle because beels remained under deep water [9].

Small poultry units face additional risks from damp litter, disease, cold stress in young birds, disrupted electricity and loss of feed. A district damage-and-loss protocol should record animal deaths, milk and egg reduction, fodder loss, veterinary expenditure and distress sales.

10. Health, Water, Sanitation and Hygiene

Heavy rainfall affects health directly through drowning, injury and exposure to contaminated water, and indirectly through vector breeding, disrupted healthcare access, poor sanitation, skin disease, diarrhoea and mental stress. In Satkhira, residents reported food and clean-water shortages and an inability to cook because household yards and floors were submerged [6].

Standing water also supported a wider national dengue risk environment. DGHS data reported by Reuters showed 50,689 dengue cases and 215 deaths by 6 October 2025. Experts linked the worsening outbreak to erratic rainfall, prolonged mosquito breeding conditions and inadequate removal of standing water [11]. This association should not be interpreted as a district-specific attribution of cases to the July rainfall, but it is a strong warning for urban and peri-urban waterlogging management.

Health/WASH hazard	Groups most exposed	Required response
Contaminated drinking water	Children, pregnant women, older people and low-income households	Water-quality testing, emergency treatment and safe storage
Flooded latrines and drains	Dense settlements and institutions	Temporary sanitation, disinfection and rapid drainage
Dengue and chikungunya breeding	Urban and peri-urban residents	Larval-source reduction, surveillance and targeted control
Skin and fungal disease	People wading through stagnant water	Protective equipment, hygiene supplies and primary care
Interrupted medicine and referral	People with chronic illness and disabilities	Mobile medical teams, medicine continuity and accessible transport
Psychosocial stress	Displaced families and households facing repeated losses	Community support and referral pathways

Health evidence gap

Routine reporting should connect health data with rainfall, waterlogging location, occupation, age, sex and disability. Without geocoded surveillance, health services cannot distinguish citywide seasonal trends from event-specific hotspots.

11. Urban Infrastructure, Housing and Essential Services

Khulna's June event inundated major roads and neighbourhoods, including Royal Intersection, Khan Jahan Ali Road, Shamsur Rahman Road, KDA Avenue, Tutpara, Chanmari and other low-lying areas. Ground floors of homes and shops were affected, vehicles were stranded and traffic congestion increased [4].

Residents and local reporting linked the severity to slow drainage improvement works, unfinished road excavation and insufficient drainage capacity. This is a governance and project-management issue as well as a climate issue. Infrastructure construction can temporarily reduce drainage and road width, increasing exposure if works are not sequenced before the monsoon.

Rural roads, culverts, sluice gates and embankments determine whether rainwater can move safely. Blocked culverts or filled canals can shift water into homes and fields. The July events demonstrated that opening sluice gates alone may not be sufficient when downstream water levels are high or channels are silted.

11.1 Housing

Low-income houses are frequently built near drains, canals and low-lying land. Water entering the ground floor damages bedding, documents, food stocks, electrical items and school materials. Recurrent shallow flooding creates cumulative repair costs even when a house is not structurally destroyed. Raised plinths, protected electrical systems, flood-resilient sanitation and safe storage can substantially reduce household losses.

11.2 Transport and market access

Urban waterlogging reduced vehicle availability and increased fares. In rural areas, submerged roads interrupted the transport of seedlings, feed, veterinary supplies and harvested produce. Market disruption can force distress sales before rain or prevent sales after rain, while consumers may face higher prices and reduced availability.

12. Education and Public Institutions

BSS reported that public offices and educational institutions in Paikgachha, Koyra and Dacope were flooded during the July event [5]. Even where schools remain formally open, waterlogged access roads, unsafe toilets and household displacement reduce attendance. Books, uniforms and learning materials may also be damaged at home.

Education impact monitoring should record institution days lost, student attendance, WASH functionality, damage to learning materials and the use of schools as shelters. Recovery should include replacement materials and flexible academic schedules for affected students.

13. Gender, Poverty and Social Inclusion

Heavy-rainfall impacts are unequal. Daily wage workers lose income immediately, while households with savings can purchase water, transport and repair services. Women and girls often manage cooking, cleaning, water collection, childcare and care for sick relatives. When kitchens and toilets are flooded, the burden rises while privacy and safety decline.

Persons with disabilities, older people and people with chronic disease face barriers in wading through water, reaching health facilities and receiving warnings. Women managing home-based enterprises may lose inventory without being counted as formal business losses. Female-headed households and landless families are also less likely to receive agriculture-based compensation.

- All assessments should be disaggregated by sex, age, disability, occupation and tenure status.
- Relief distribution points and shelters should have accessible routes, privacy, lighting and gender-responsive WASH.
- Cash assistance should include informal workers, tenants and home-based producers, not only landowners.

14. Environmental and Ecosystem Impacts

Heavy rain can flush pollutants and solid waste into rivers, canals, ponds and the Sundarbans-adjacent aquatic environment. It can also temporarily reduce salinity but increase turbidity, nutrient loading and

contamination. Where pond water connects with rivers or drains, cultured species may escape and disease can move between farms.

The environmental effect depends on water quality and drainage duration. Short-duration freshwater recharge can be beneficial in saline areas, while stagnant contaminated water damages vegetation, soils and household water sources. Drainage interventions should therefore avoid transferring polluted water into ecologically sensitive channels without treatment or monitoring.

15. Focused Case Studies

15.1 Khulna City: intense rain meets constrained drainage

The 83 mm event of 16–17 June submerged roads, alleys, homes and shops across Khulna city. The visible impact was urban mobility failure, but the underlying issues included slow-moving drainage works, excavated roads and reduced conveyance. The case shows that climate-resilient infrastructure must include construction-phase risk management, not only final design.

Operational lesson

Before the monsoon, KCC, KWASA, contractors and ward authorities should publish a joint drainage readiness plan identifying open excavations, temporary diversions, blocked drains, pump locations, emergency crews and public reporting channels.

15.2 Paikgachha, Koyra and Dacope: agriculture-aquaculture compound loss

The July event linked four systems: heavy rainfall, low-lying agricultural land, enclosure-based aquaculture and weak drainage. Offices, schools, roads, nurseries, crop fields, homes and aquaculture assets were simultaneously affected. Because many households combine farming, fishing and wage labour, losses were not diversified. They accumulated across the same household portfolio.

15.3 Satkhira: household inundation and clean-water stress

Satkhira recorded two major July observations, including 129 mm on 4 July and 100 mm on 14 July. Municipal wards and 14 unions in Sadar were affected, while Shyamnagar, Assasuni and Kaliganj experienced serious waterlogging. Families built raised platforms and improvised banana-tree rafts. Food preparation and safe-water access became immediate concerns [6].

15.4 Bhabadah: when a rainfall event becomes a development crisis

The Bhabadah case is the strongest evidence that impact duration must be measured beyond the emergency period. More than 150 villages and 200,000 people were reportedly affected during July and August 2025. Agricultural land remained waterlogged into 2026, preventing Boro cultivation across 17,800 hectares and affecting more than 25,000 farmers [9].

BWDB reported ongoing re-excavation of 81.5 km of river at a cost of Tk 140 crore, a proposed Tk 45 crore for pumps and Tk 20 crore for canal excavation. These investments demonstrate the scale of the drainage challenge, while local stakeholders continue to call for TRM and long-term basin management [9].

16. Preparedness and Response Assessment

Bangladesh has strong meteorological and flood-forecasting institutions, but the 2025 southwest events exposed gaps between hazard information and local impact management. Rainfall forecasts do not automatically resolve blocked drains, vulnerable embankments, crop protection or safe-water provision.

Area	Existing strength	Key gap

Area	Existing strength	Key gap
Weather forecasting	BMD monitoring of low-pressure systems and rainfall	Alerts are not consistently linked to neighbourhood and livelihood actions
Flood information	FFWC river monitoring and forecasts	Urban and tidal waterlogging is not fully represented by river danger levels
Local government	Sluice operation, drain clearance and emergency coordination	Maintenance is often reactive; construction projects can obstruct drainage
Agriculture and fisheries	Local officers collect event damage data	Methods and reporting periods are inconsistent; aquaculture valuation is weak
Health	National dengue and disease surveillance	Limited event-level linkage with waterlogging hotspots and WASH failures
Social protection	Existing relief and safety-net channels	Limited automatic triggers for income loss and prolonged waterlogging

The national flood situation report in early June documented loss of life, displacement and damage in several other regions after heavy rainfall and a late-May depression [7]. While the southwest was not the principal focus of that report, it confirms that 2025 involved multiple geographically distinct rainfall emergencies. Preparedness systems therefore need scalable, decentralized activation rather than a single national emergency model.

17. Recommendations

17.1 Establish a Southwest Heavy Rain and Waterlogging Action Plan

- Define rainfall and water-level triggers for Khulna city, coastal polders and Bhabadah-type basins.
- Assign responsibilities to BMD, FFWC, BWDB, local government, DAE, DoF, health authorities and civil society.
- Pre-identify drainage bottlenecks, pump sites, shelters, safe-water points and evacuation routes.
- Use ward and union-level maps that combine rainfall, elevation, drainage, embankment and livelihood data.

17.2 Shift from rainfall warning to impact-based warning

Messages should state which areas may waterlog, which roads may become impassable, which crops and ponds are at risk, and what actions should be taken. Alerts should reach farmers, fish farmers, transport workers, schools, markets and health facilities through local channels.

17.3 Complete pre-monsoon drainage readiness audits

- Clean drains, canals and culverts before the monsoon and publish completion status.
- Require contractors to maintain temporary drainage around excavated roads and construction sites.
- Protect canals from encroachment and solid-waste dumping.
- Inspect sluice gates, pumps and backup power before forecast heavy rain.

17.4 Develop basin-scale solutions for Bhabadah

Drainage interventions should be based on basin hydrology rather than isolated excavation. A transparent technical and social assessment of TRM, river restoration, pumping and land-use adaptation is required. Communities must participate in site selection, compensation and monitoring.

17.5 Protect agriculture before and after rainfall

- Issue crop-stage advisories and identify safe seedbed locations.
- Provide rapid access to replacement seed, seedlings and small grants.
- Monitor whether land becomes cultivable for the next season, not only immediate crop damage.
- Use satellite and field data to verify affected hectares and avoid exclusion of tenant farmers.

17.6 Strengthen aquaculture risk management

- Promote raised dykes, outlet screens, emergency netting and elevated feed storage.
- Provide rainfall-triggered water-quality advisories and mobile testing.
- Create a standard method for valuing escaped stock, infrastructure and input losses.
- Pilot affordable index or parametric insurance with safeguards for small farmers.

17.7 Integrate WASH and vector control

- Pre-position water-treatment materials and test inundated water points.
- Activate rapid drain and solid-waste clearance after rainfall.
- Use geocoded dengue and diarrhoea surveillance to target hotspots.
- Ensure shelters and institutions have accessible, gender-responsive sanitation.

17.8 Introduce shock-responsive livelihood support

Cash or food support should be triggered where waterlogging prevents work or cultivation beyond a defined duration. Eligibility should cover informal workers, aquaculture labourers, tenant farmers, women-led enterprises, persons with disabilities and families without formal land records.

17.9 Improve urban climate resilience

- Adopt neighbourhood drainage standards based on future rainfall intensity.
- Protect retention ponds, canals and open spaces from filling.
- Use permeable surfaces and rainwater storage in public and private development.
- Create a public waterlogging dashboard for complaints, response time and drainage status.

18. Proposed Monitoring Framework

Sector	Core indicator	Frequency	Responsible actors
Meteorology	24-hour and event rainfall; consecutive wet days; forecast lead time	Daily during monsoon	BMD
Urban drainage	Depth and duration of waterlogging at fixed points	Event and daily until cleared	KCC, municipalities, LGED
Rural drainage	Canal, sluice and pump functionality; inundation duration	Weekly during events	BWDB, local government
Agriculture	Affected hectares by crop and stage; re-sowing; land cultivable next season	Initial, 14-day and post-season	DAE
Aquaculture	Affected ponds/enclosures; escaped stock; infrastructure damage	Initial and 14-day	DoF
Livelihoods	Workdays and income lost by occupation and sex	Household sample after event	BBS, local government, NGOs
Health	Drowning, injury, diarrhoea, skin disease, dengue and service interruption	Daily/weekly	DGHS
WASH	Safe-water points disrupted; latrines flooded; water-quality tests	Event and weekly	DPHE, local government

Sector	Core indicator	Frequency	Responsible actors
Education	Schools inaccessible/closed; attendance and WASH functionality	Daily during event	Education authorities
Social protection	Households reached, transfer value and delivery time	Event and monthly	MoDMR, social services

19. Research and Data Gaps

- No consolidated 2025 damage-and-loss database for Khulna Division.
- Limited monetary valuation of aquaculture and informal-sector losses.
- No systematic measurement of household water depth, duration and recovery time.
- Insufficient data on livestock, poultry, education and mental-health impacts.
- Weak integration of rainfall, drainage, health and social-protection datasets.
- Limited sex-, age-, disability- and tenure-disaggregated loss data.
- Few public evaluations of drainage projects and construction-phase waterlogging risk.
- Inconsistent distinction between assets flooded, damaged, washed away and permanently lost.

AOSED and Climate Justice Forum Bangladesh could address these gaps through a mixed-method field study combining household surveys, focus groups, key-informant interviews, water-depth mapping, farm production data and participatory drainage assessment in selected urban wards and coastal upazilas.

20. Conclusion

Heavy rainfall in 2025 produced repeated and unequal impacts across Bangladesh. In the southwest, the most important events were concentrated in June and July, when intense rainfall overwhelmed urban and rural drainage. Khulna city experienced severe waterlogging and transport disruption. Paikgachha, Koyra and Dacope sustained simultaneous damage to crops, aquaculture, roads, institutions and homes. Satkhira experienced household inundation, clean-water stress and losses to agriculture and fisheries.

The visible 2025 losses were only part of the story. Bhabadah demonstrates that waterlogging can remain after rainfall ends, prevent the next crop, deepen debt and food insecurity, and affect hundreds of thousands of people. This makes heavy rain a livelihood, economic and governance challenge, not simply a meteorological event.

The policy priority is to connect forecasting with local action. Drainage readiness, basin-scale water management, resilient agriculture and aquaculture, WASH, health surveillance, inclusive social protection and transparent loss accounting must operate as one system. Without structural reform, similar rainfall will continue to produce avoidable losses. With locally grounded planning and sustained investment, the southwest can reduce exposure while protecting the livelihoods that depend on its rivers, fields, ponds and coastal ecosystems.

References

1. Bangladesh Meteorological Department. Long Range Weather Forecast for June–August 2025, 4 June 2025. Source link
2. Bangladesh Meteorological Department. Long Range Weather Forecast for July 2025, 2 July 2025. Source link
3. Bangladesh Meteorological Department. Long Range Weather Forecast for August–October 2025, 3 August 2025. Source link
4. Bangladesh Sangbad Sangstha. Heavy rain brings life in Khulna to standstill, 17 June 2025. Source link
5. Bangladesh Sangbad Sangstha. Heavy rain washes away over 100 shrimp enclosures, damages huge cropland in Khulna, 9 July 2025. Source link

6. Dhaka Tribune. Heavy rainfall leaves Satkhira submerged, crippling lives and livelihoods, 15 July 2025. Source link

7. Bangladesh Red Crescent Society. Situation Report 1: Flood in Bangladesh, 2 June 2025. Source link

8. The Daily Star. Koyra upazila: Damaged embankment puts 15,000 at risk, 31 May 2025. Source link

9. The Daily Star. Waterlogging wipes out Boro hopes for 25,000 farmers, 1 May 2026. Post-season reporting on 2025 monsoon effects. Source link

10. Islam, M. R., Ashrafee, S., and Nahar, N. Disaster Risk Reduction Through Waterlogging Prevention in (Southwestern) Bangladesh. Springer, 2023. Source link

11. Reuters. Dengue cases surge across Bangladesh as experts call for urgent action, 7 October 2025. Source link

12. Flood Forecasting and Warning Centre, Bangladesh Water Development Board. Operational flood information portal. Source link

13. Bangladesh Meteorological Department. Official meteorological information portal. Source link

Appendix A. Consolidated 2025 Southwest Evidence Table

Location and date	Hazard observation	Verified impact statistics	Source
Khulna city, 16–17 June	83 mm in 24 hours	Roads, alleys, homes and shops inundated; fares increased on scarce transport	[4]
Koyra, 30–31 May	High tide and embankment collapse	300 m collapsed at five points; at least 15,000 people at risk	[8]
Khulna district, 8–9 July	138 mm in 36 hours	>3,000 enclosures and ~1,000 ponds affected; >200 ha crops; Tk 4.5 crore crop loss	[5]
Paikgachha, July	Prolonged rain and waterlogging	2,850 enclosures; >900 ponds; 217 ha named crop categories affected	[5]
Satkhira, 4 and 14 July	129 mm and 100 mm daily observations	312 ha crops affected; Tk 1.5 crore agricultural loss; thousands of families trapped	[6]
Bhabadah, July–August and aftermath	Persistent waterlogging after excessive rain	>150 villages; >200,000 people; >17,800 ha fallow in next Boro season; >25,000 farmers unable to cultivate	[9]

Appendix B. Interpretation Rules

- “Affected” does not necessarily mean destroyed; it may include inundated, damaged or temporarily inaccessible assets.
- Rainfall observation windows differ across reports and should not be compared as identical 24-hour measurements.
- Monetary values are nominal Bangladesh taka as reported by the cited source.
- Post-season Bhabadah figures describe the continuing effects of the 2025 monsoon but were documented in 2026.
- The Tk 6 crore minimum combines two separate crop-loss reports only. It is not a total economic loss estimate.