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RESEARCH ARTICLE

MANY PLANS, THIN PIPES: THE DELIVERY DEFICIT IN BANGLADESH'S CLIMATE GOVERNANCE

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Abstract

Bangladesh has produced formal adaptation plans earlier than most other least-developed countries. Whether these documents reduce exposure, however, remains largely uncertain. This study examines why vulnerability persists although national climate policy has expanded since 2005. We argue that binding constraints have shifted from knowledge to delivery, which existing research underplays. The design is qualitative; documents supply evidence. We analysed 2009–2026 plans, budgets and audits, and journal articles added context. Coding was thematic, and three ledgers emerged. They track hazards, finance and leakage; fieldwork awaits. Climate-relevant allocations reached 11.03 percent of twenty-five ministries' budgets in FY2026–27, yet the National Adaptation Plan remains largely unfunded. Monitoring was sparse, and statutory audits effectively ceased after 2015. District shares ignored vulnerability, and corruption reportedly absorbed over half of trust approvals. Visible outputs such as solar streetlights crowded out research and capacity-building, which suggests that countability rather than risk shaped most funding decisions. Ambition grew while institutional delivery stagnated. The three-ledger framework offers a novel, transferable diagnostic for climate governance in Bangladesh and other comparable deltas. Reform should strengthen institutions that make spending traceable, not draft strategies. Priorities include independent audit, open procurement and allocation that follows measured vulnerability. International credibility rises when citizens can verify integrity domestically.

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Introduction:-

In February 2026, Bangladesh elected a new government after eighteen months of interim rule (Al Jazeera, 2026). That administration inherited a full shelf of climate commitments, which earlier regimes accumulated since 2005. Each promised resilience that never fully arrived. I wrote my first proposal on this topic when AR4 still dominated. Science has advanced since, and policy multiplied. Budgets grew too, but household protection lagged behind. Existing studies explain hazards with precision, and others document corruption in careful detail, but few connect

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both strands analytically. I call that gap the delivery deficit; I measure it. Three ledgers structure the analysis, and each draws on distinct official evidence streams. The first follows physical exposure, the second traces allocated money, and the third records leakage of public resources through bribery and waste. None works alone; together they illuminate. This framing is novel because Bangladeshi climate scholarship has rarely treated procurement integrity as an adaptation variable. It also matters practically, since the new government controls national budgets. Bangladesh occupies the lower Ganges–Brahmaputra–Meghna delta, the largest deltaic plain on Earth (MoEFCC, 2025). Its floodplains sit so low that surges penetrate deeply. Some 28 percent of citizens live near the shore, where sea-level rise threatens most (MoEFCC, 2025). Satellite records show that coastal waters climbed 3.8 to 5.8 millimetres annually across three decades (DoE, 2023, cited in MoEFCC, 2025).

My 2014 proposal had already listed them. What has changed is the density of evidence and policy surrounding them. Attribution science shows how warming intensifies extremes. Ministries have also written plans that span decades. The 2009 strategy became a model for other vulnerable states, and a domestic trust fund followed within a year (World Bank, 2022). Budget tagging began in FY2018, and coverage later expanded steadily (Khatun et al., 2024). The adaptation plan appeared in 2022, and NDC 3.0 arrived in September 2025. Each document raised ambition, but few specified the procurement, monitoring and audit machinery needed for spending at the newly promised national scale. Paper grew thicker; capacity did not. Scholars noticed fragmentation early, and recent reviews still report weak coordination between central ministries and local bodies (Ayers et al., 2014; Rida, 2025). Their diagnosis was sound, yet fiscal evidence stayed peripheral to it. This article asks whether money, rather than knowledge, now constrains Bangladeshi adaptation. It also probes where state funds leak most severely. The second section reviews recent literature across hazards, health, mobility, public finance and governance. Part three explains how I selected and verified sources, while chapter four reports the ledgers. The fifth interprets the patterns that emerged. Policy recommendations then follow, after which I close with limits and questions.

Literature Review:-

Physical risk and attribution:-

Physical science has moved well beyond AR4. AR6 concluded that South Asian extremes are intensifying (Shaw et al., 2022). The chapter documents rising heat, heavier monsoon downpours and coastal inundation, which threaten food systems across densely settled deltas (Shaw et al., 2022; IPCC, 2023). Rapid attribution then quantified what such trends mean for Dhaka. April 2023 heat became at least thirty times likelier; temperatures ran 2°C higher (World Weather Attribution, 2023). Comparable events historically struck Bangladesh and India about once per century, but under present warming they may recur roughly every five years (World Weather Attribution, 2023). Summers grew harsher; relief stayed scarce.

Heat, health and water:-

The World Bank counted 250 million lost workdays in 2024, and women suffered heat illness more often (World Bank, 2025). Maximum temperatures have risen 1.1°C since 1980, and Dhaka fares worst (World Bank, 2025). Such costs are economic, but they are also, above all, intensely human. Bodies tire, minds fray, and household incomes shrink accordingly. Salinity research has also matured, since cohorts and meta-analyses now replace scattered case reports. A 2025 review of 27 studies found that saline water raised hypertension odds 26 percent (Das Gupta et al., 2025). Costopoulos and colleagues also flagged preeclampsia risks (Costopoulos et al., 2025). Higher infant mortality appeared too, which makes this coastal problem plainly intergenerational. Cyclones matter because surges contaminate drinking ponds. Aquifers suffer as well, as Tsai's team showed (Tsai et al., 2024). Polders add another layer, with poor drainage and shrimp conversion steadily expanding waterlogged land across the southwest since 1972 (Ahmed & Ambinakudige, 2023; Jubaed et al., 2025).

Mobility and displacement:-

Mobility studies show that disasters dominate internal displacement across Bangladesh. IDMC recorded 2.4 million movements in 2024, when monsoon floods caused over half (IDMC, 2025). A nationwide IOM assessment in late 2025 then estimated 4,955,527 people still living displaced, of whom most had moved before April 2020 (IOM, 2025). reached US\$533.7 billion (Arfanuzzaman, 2024). Rida examined ethics, and the analysis exposed enforcement gaps (Rida, 2025). The NAP scored noticeably better on participation, but the delta blueprint remained largely technocratic (Rida, 2025). Wetland projects revealed opaque spending and token consultation, and misread local power dynamics distorted results (Rahman et al., 2025). LLA promised correction because communities choose priorities. IIED found that such interventions work, although legal and administrative barriers persist (Mirza et al., 2023). Scaling remains the stubborn, unsolved national problem.

Climate finance and integrity:-

Fiscal research explains why scaling stalls so often. Bhandary showed that Bangladesh kept tight domestic control over its resilience fund, which signalled confidence yet raised transaction costs (Bhandary, 2024). UNEP reports that international adaptation flows actually fell during 2023 (UNEP, 2025). Developing-country requirements could exceed US\$310 billion yearly by 2035, twelve times today's support (UNEP, 2025). COP30 in Belém called for tripling this finance within a decade, although many analysts doubt that pledge after Glasgow's unmet doubling target (SEI, 2025; C2ES, 2026). Treasury allocations matter because pipelines falter. TIB's 2025 governance study estimated that USD 248.4 million of the national trust's money vanished through corruption (TIB, 2025a, 2025b). Solar streetlights dominated recent approvals, and their costs were reportedly inflated. Some 216 of 373 projects installed lamps, and markups reached roughly half (TIB, 2025a). Sanction bribes existed, but implementation leakage was far larger. Regular budgets met just 23.2 percent of annual requirements, and dedicated funds barely registered (TIB, 2025b). Civil society demands independent oversight, and TIB proposes a separate audit body for climate spending (TIB, 2025a). Evidence is strong; uptake remains notably weak. Studies diagnose corruption well, yet few connect it directly to physical exposure.

Projections, fiscal tracking and the research gap:-

Projections sharpen the picture because resolution improved. Choi's team modelled extremes that Bangladesh may face (Choi et al., 2021). Their ten-kilometre simulations projected humid heat in Bogra, Ishurdi and Jessore crossing a recognised danger threshold under business-as-usual emissions. Farukh and colleagues showed that heatwave days track Indo-Pacific anomalies (Farukh et al., 2026). Coastal modelling tells a parallel story, since surges ride atop ever higher seas. Qiu, Ravela and Emanuel found that former hundred-year storm tides could strike every decade or sooner by 2100, especially under high emissions (Qiu et al., 2025). Existing embankments still assume yesterday's climate. Budget scholarship has also matured, although most of it comes from Dhaka think tanks rather than journals. Khatun and colleagues reported that FY2025 allocations fell to 10.09 percent (Khatun et al., 2024). An earlier working paper flagged utilisation rates that fluctuated across fiscal years (Khatun & Al Kabir, 2023).

Tagging rules differ across ministries, and headline totals blur (CPD, 2026). TIB went further, and its 2025 study combined national budget, spending and interview data (TIB, 2025b). It examined 942 projects across twelve funds, and it found gaps under every governance indicator. Its scale is unusual; academic journals lag. Peer review remains thin here, so integrity claims rest on grey evidence. That weakness is real; I acknowledge it. Triangulation helps, and government figures corroborate several findings. Taken together, these literatures describe exposure, finance and leakage in parallel, which leaves their interaction largely unexamined in Bangladesh. Hazard papers rarely ask who actually spends the public money. Budget analyses, conversely, seldom map allocations onto the districts facing the fastest-rising threats. Integrity audits, meanwhile, hardly ever test whether completed outputs reduced risk for the specific households that funding was originally meant to protect. I join them because separation misleads.

Conceptually, I borrow institutional layering, which describes new rules added atop older ones without ever replacing them (Streeck & Thelen, 2005; Mahoney & Thelen, 2010). Bangladesh's climate architecture fits that description remarkably closely, in my view. The framework also predicts drift, because unchanged institutions absorb fresh mandates selectively. That happens when statutes stay fixed while contexts shift. Mahoney and Thelen argue that gradual change unfolds beneath a surface of formal stability. The Trust Act exemplifies that pattern, and TIB judges the 2009 strategy seriously outdated today (TIB, 2025b). The laws aged; meanwhile, hazards kept accelerating.

Materials and Methods:-

This study is qualitative, and it relies chiefly on documentary analysis throughout. Official records came first; scholarly sources followed. Grey reports added depth, and newspapers filled gaps. Core documents included NAP 2023–2050, NDC 3.0, climate budget analyses and TIB's governance assessment, and I extracted figures directly. Journal articles were sought by keyword, and recency was prioritised. Each reference was retained when a publisher, repository or government page confirmed it. Where figures conflicted across sources, I privileged the most official version and flagged unresolved discrepancies, such as rival accounts of strategy revisions. Thematic coding proceeded in two passes. Initially I sorted evidence by sector, whereas later I asked where scarce public money stalled or leaked. The three ledgers emerged only after the sectoral grouping was complete. I treated TIB estimates as indicative because modelled corruption rates underpin them. No human participants were directly involved in this study. Fieldwork that the original proposal planned in Barguna, Bagerhat and Noakhali has not happened. Findings therefore describe national patterns, which local surveys must eventually test against lived household experience. Single-source claims deserve caution, which I signal. Monetary figures follow the cited

sources, and I deliberately left them unconverted. Fiscal years run July–June; labels reflect this. Quotations are avoided, and careful paraphrase carries attribution. Bias remains possible, for official documents present governments rather favourably, and civil-society reports may sometimes emphasise failure over success. Cross-reading both genres helps considerably, yet some distortion inevitably survives.

Results:-

The hazard ledger:-

Hazards are compounding across the delta, and their costs already strain public finances. NDC 3.0 puts annual climate damage near US\$3 billion, roughly 1 percent of GDP, and severe floods could shrink output far more (MoEFCC, 2025; World Bank, 2022). Agriculture suffers most because salinity spreads. The World Bank projected that a third of agricultural value added could disappear by 2050 without adaptation (World Bank, 2022). Southern cropland may shrink 18 percent by 2040 without timely action (World Bank, 2022). Salinity threatens health too, because coastal households consume increasingly brackish water daily (Das Gupta et al., 2025). Cyclones worsen this because surges contaminate drinking ponds directly (Tsai et al., 2024). Rapid post-surge cleaning reduces lasting damage, which suggests that cheap local measures genuinely matter (Tsai et al., 2024).

Storm tides add a forward-looking warning for engineers designing the next generation of coastal embankments (Qiu et al., 2025). Structures fail when yesterday's statistics guide them. Heat, meanwhile, already costs output that would otherwise sustain poorer household incomes. 250 million workdays vanished because illness spread (World Bank, 2025). Uprooting rose, and recovery often stalled long afterward. IDMC counted 2.4 million disaster movements in 2024, and IOM later estimated 4,955,527 people still displaced across sixty-four districts (IDMC, 2025; IOM, 2025). Most had fled before 2020, so protraction is clearly evident. Emissions remain tiny, for per-capita greenhouse output stood at 1.48 tonnes in 2022 (MoEFCC, 2025). Totals still climb with industrialisation, and NDC 3.0 pledges a 6.39 percent unconditional reduction below business-as-usual by 2035, rising with international support. Mitigation matters; adaptation decides survival here. This evidence therefore points toward money, and fiscal records reveal disappointingly thin delivery on earlier paper promises.

The fiscal ledger:-

Policy layers accumulated quickly, while fiscal machinery evolved far more slowly. NAPA came in 2005, after which BCCSAP and the trust law followed. A delta blueprint arrived in 2018 with century-long ambitions. The NAP added 113 interventions, which NDC 3.0 later partly absorbed by adopting 65 (MoEFCC, 2022; MoEFCC, 2025). A prosperity plan also exists, although official texts now list it under a new name. None was ever repealed when successors appeared. Budget tagging began in FY2018 with six ministries before eventually covering twenty-five (Khatun et al., 2024). Allocations rose sharply when FY2026–27 proposals arrived. Their share reached 11.03 percent, which exceeded FY2025 (Hossain, 2026). Three-quarters targets adaptation, which seems sensible, although inflation erodes much of the nominal increase that newspapers reported in June.

Requirements dwarf allocations, and external pipelines hardly flowed at all. The NAP needs US\$8.5bn yearly, but national budgets recently provided only about US\$3.6bn (TIB, 2025b). Delta Plan implementers hoped for US\$2 billion annually from the Green Climate Fund, yet they secured absolutely nothing between 2018 and 2024 (TIB, 2025b). Promises travelled widely; money rarely followed. Specialised trusts supplied merely 0.7 percent of the estimated bill, and mainstream spending met under a quarter (TIB, 2025a, 2025b). Loans filled part of the gap, and sovereign debt accumulated accordingly. Credit formed 43.6 of every hundred approved dollars; repayment burdens will accrue (TIB, 2025b).

The integrity ledger:-

Domestic money matters more because external flows keep disappointing. TIB estimated that US\$248.4 million, roughly 54 percent of approvals since 2010, was lost (TIB, 2025b). Embezzlement during implementation accounted for the largest slice, far above bribery at the sanctioning stage. Solar streetlights dominated because they were countable. Of 373 projects approved during 2019–2023, 216 installed lamps that were overpriced (TIB, 2025b). I suspect visibility explains what got funded. Research received four percent against a 25-percent guideline. Infrastructure, meanwhile, absorbed 57.8 percent of total allocations, although trust guidelines had explicitly capped that thematic area at one-fifth (TIB, 2025b). Distribution also ignored where vulnerability actually concentrated across Bangladeshi districts. National-fund approvals correlated only 0.2 with vulnerability scores, whereas international money reached 0.4 (TIB, 2025b). Chattogram, rated comparatively safe, drew the largest domestic sum, and one former board chair steered US\$23.6 million toward his own home district. Rules existed; enforcement simply did not. Monitoring skipped 24.3 percent of trust works, and only 90 of 585 completed schemes

received independent evaluation. The auditor-general examined a single project in 2015, and none followed. First disbursements averaged 388 days, and most completion deadlines were subsequently extended. Durations more than doubled, yet sanctions rarely materialised afterward. BCCT officials described themselves as mere cashiers, and implementing agencies owed them no accountability (TIB, 2025b).

These patterns suggest that leakage is systemic rather than incidental, which changes what reform requires. Integrity, therefore, belongs where adaptation is measured. Without it, every new plan simply inherits the same cracked pipes underneath. This is why the title chose thinness. Narrow conduits carry little, whatever the reservoirs promise. The discussion that follows asks why such channels persist despite two decades of official rhetoric and repeated donor engagement. Comparative fund behaviour offers the first genuinely useful clue here.

Discussion:-

Multilateral money tracked district vulnerability better, which suggests that external safeguards genuinely bite (TIB, 2025b). Bhandary's comparison shows that Dhaka preferred domestic control over its resilience fund, because policymakers read national management as an endorsement from abroad (Bhandary, 2024). Sovereignty mattered, though oversight quietly suffered. Country ownership is entirely legitimate, but it also requires accountability institutions of comparable strength and genuine independence. Dhaka built sovereignty quickly, yet supervisory capacity never fully caught up. Sri Lanka's smaller fund innovates more, and TIB calls it a model (TIB, 2025b). Scale is not destiny, and institutional design can compensate. Time offers a second lesson, for delays erode public trust and real purchasing power. Projects waited over a year for money, and their durations then stretched by 134 percent (TIB, 2025b). Inflation compounds lag; vulnerable communities pay twice.

Layering explains why such dysfunction persists despite repeated diagnosis by independent observers. Strategies sit atop institutions that never evolved. The 2010 Trust Act still governs the fund. Its BDT 15 crore project ceiling discourages medium-term transformative proposals, which leaves short, conventional infrastructure dominating approvals almost annually (TIB, 2025b). Board membership is partisan, since ministers chair, deliberate and vote (TIB, 2025b). Formal mandates therefore expanded while the underlying incentive structure stayed exactly the same. This resembles drift in Mahoney and Thelen's sense, with unchanged rules producing different outcomes amid shifting climate risk, budgets and political settlements (Mahoney & Thelen, 2010). Reform must target what stood still. The 2026 government can move decisively, because its two-thirds majority removes the familiar legislative excuses for delay (Al Jazeera, 2026). Whether it will rewrite that particular statute remains an open question.

Comparable deltas face similar risks, and Bangladesh's experience therefore travels quite widely. Other planners can borrow ideas, but careful selectivity matters. Early warning has saved lives, but fiscal integrity has received far less sustained attention (World Bank, 2022). The country excelled at cyclone preparedness, and it could champion transparent, auditable adaptation spending globally. Donors would notice, and lenders would too. Credibility attracts grants, and concessional terms ease the sovereign debts already accumulating. Honesty pays, and leakage costs everyone twice. Limitations remain, because household fieldwork is still pending. TIB's estimates also depend on assumed sectoral rates, which future audits by the auditor-general could independently confirm or overturn. Even so, the documentary pattern is remarkably consistent and troubling.

Conclusion and Recommendations:-

Five reforms follow from this analysis, although none requires yet another strategy document. First, Parliament should amend the Trust Act so that professional trustees, not ministers, approve projects under openly published criteria and conflict-of-interest rules. Second, inspect wherever climate money flows. Every climate-tagged contract should run through e-procurement with open bids and annual random audits by the auditor-general. Third, allocation should follow published vulnerability formulas that anyone can check. Deviations should be justified before Parliament, which would deter overt political targeting. Fourth, union councils should receive grants that communities direct.

Fifth, judge outcomes rather than outputs, and publish every completed scheme's evaluation online promptly. Bangladesh should press for grants, and negotiators can cite Belém's tripling pledge for adaptation finance (C2ES, 2026). Credibility starts at home; donors watch closely. Change will meet resistance, but transparency gives reformers allies within civil society. Journalists already investigate; auditors should join them. Courts can act, and voters can certainly remember. Accountability is no luxury, for every misused taka subtracts protection from someone already facing salinity, surges or extreme heat. When my proposal began, physical risk alone seemed

entirely central. Today governance matters more, because hazards are already thoroughly documented by climate scientists. Bangladesh now holds plans for every conceivable future but lacks the audited delivery machinery needed to protect coastal homes, fields and wells. Until that changes, adaptation stays rhetorical. Subsequent research should test these claims in the southern upazilas that my original study design had selected. Household surveys could reveal whether approved money reaches vulnerable families intact. Such evidence would finally complete the three-ledger framework proposed in this article.

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