

Disasters and Development Disruption: Synthesizing the Economic Impacts and Mitigation Strategies for Bangladesh

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Abstract

Natural catastrophes increasingly threaten economic stability, particularly in emerging nations characterized by vulnerable infrastructure and inadequate adaptive capability. Bangladesh, being a disaster-prone nation, is consistently subjected to shocks that negatively impact its economic development. These occurrences have immediate consequences, including infrastructure damage, agricultural devastation, and income disruptions, as well as indirect effects that influence long-term GDP, employment, and investment reductions. Comprehending these mechanisms is crucial for developing effective policy strategies. This study adopts a qualitative, narrative literature review methodology by integrating peer-reviewed journals and policy reports to examine the economic impacts of natural disasters in Bangladesh and similar regions. The review indicates key economic variables influenced by catastrophe vulnerability, including productivity, trade, sectoral output, and household earnings. It emphasizes how government quality, financial market maturity, and societal vulnerability influence the intensity of these consequences. Evidence indicates that sustained economic recovery is especially difficult in agriculturally dependent and institutionally weak areas. The present article enhances catastrophe economics by providing a thematically structured synthesis of economic vulnerabilities and mitigation strategies. It offers practical policy implications for boosting economic resilience by investing in infrastructure, early warning systems, and inclusive financing strategies designed for high-risk countries.



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Introduction

Natural disasters, including floods, storms, earthquakes, and droughts, have far-reaching consequences on economic activity, influencing both short-term productivity and long-term development. These events can negatively or positively affect a country, depending on its structural resilience and policy response. A catastrophic event is described as a natural occurrence that disrupts the operation of the economic system, having a major adverse effect on resources, manufacturing variables, outcomes, labor, or expenditure (Hallegatte & Przyluski, 2010). The seriousness of the disaster's consequences varies with the event's endurance, the vulnerability of the population, the extent of economic damages, and the duration of the recovery process (Ibarrarán et al., 2009). Natural catastrophes affect economic systems through both direct and indirect channels. While direct effects include the immediate economic and physical harm, indirect effects include longer-term issues, including a decline in GDP, decreased productivity, and worse trade outcomes. For instance, disasters often lead to a decline in production and services, as well as the complete or partial destruction of assets (Yiew et al., 2018). A major disaster like an earthquake may result in a variety of economic consequences for the region, depending on how interconnected every sector of the economy is and how long it takes for their businesses to recover (Martinelli et al., 2014). Natural catastrophes also affect socioeconomic factors such as population size, labor volume, and company turnover, along with asset reserves, in both immediate and indirect ways (Marin & Modica, 2017). Severe catastrophes may raise out-migration rates, resulting in lower local output and workforce demands, whereas the migratory reaction to minor disasters is modest but growing with

time (Boustan et al., 2020). Such disasters are commonly associated with declines in per capita income and economic development, resulting in an economic decline in the future economy (Sodhi, 2016). Natural catastrophes significantly affect both long- and short-term gross domestic product, tangible assets, human capital, the workforce, and the property market (Kellenberg & Mobarak, 2011).

The degree of damage and the cost of recovery depend heavily on a country's economic structure and resilience mechanisms. A country's ability to endure the consequences of initial natural catastrophe shocks is enhanced by factors such as strong infrastructure, high literacy, income, trade openness, government expenditure, foreign reserves, domestic debt, and limited capital account opening (Botzen et al., 2019; Noy & Vu, 2010; Noy & Yonson, 2016). In contrast, many underdeveloped countries lack the institutional capacity, infrastructure, and socioeconomic safeguards to manage the aftermath of disasters. Natural catastrophes mostly affect developing nations because of their weak infrastructure, inadequate adaptability, poor socioeconomic situations, limited resources, and unstable governments (A. Hossain et al., 2024). These countries are more vulnerable due to risky settlement patterns, fragile construction, absence of early warning systems, and underdeveloped social security frameworks (Zorn, 2018). These vulnerabilities can exacerbate the economic burden of disasters by fueling poverty, worsening inequality, and hindering national development. Natural catastrophes have been particularly consequential for Bangladesh, where the economy is frequently disrupted by recurring events such as tropical cyclones, floods, and earthquakes. Catastrophes such as tropical cyclones, floods, and earthquakes do not simply result in loss of life and assets; they additionally destroy infrastructure and restrict advancement in the economy (N. Karim, 1995). Bangladesh is highly susceptible to catastrophic events because of its meteorological and geographical factors, inadequate preparedness structures, low governance, and substantial population density (Shoji & Murata, 2018). The frequency, scale, and economic impact of these events have steadily increased in recent decades, affecting infrastructure, livelihoods, and overall economic performance. Despite an expanding body of global literature on disaster economics, there remains a lack of a focused, Bangladesh-specific review synthesizing the economic effects of natural disasters. This review addresses that gap by analyzing both direct and indirect economic impacts, identifying critical factors influencing vulnerability and resilience, and highlighting policy implications for disaster risk reduction and economic recovery.

Methodology

This study employs a qualitative, narrative literature review methodology to synthesize knowledge on the economic consequences of natural disasters, particularly in the context of Bangladesh. The review investigates both direct and indirect economic impacts, highlights key vulnerability factors, and evaluates disaster mitigation strategies relevant to developing nations with high exposure to environmental hazards. Academic sources were retrieved using structured keyword searches across multiple scholarly databases, including Google Scholar, Scopus, JSTOR, ScienceDirect, and Wiley Online Library. The search terms included combinations such as: natural disaster and economic impact, natural disasters economic impact Bangladesh, disaster vulnerability and resilience, macroeconomic consequences of floods and cyclones, post-disaster recovery and mitigation strategies, and socioeconomic effects of natural disasters. The selected literature spans from 1995 to 2025, to provide both historical grounding and inclusion of recent findings. Pre-1995 studies were included only when they were foundational to disaster economics. In addition to academic sources, the study also consulted relevant reports to capture economic disaster-related data and regional insights. Articles were selected based

on defined inclusion criteria: they had to be peer-reviewed, focus on empirical or theoretical economic analyses of disasters, relate to Bangladesh or similar contexts, or address relevant policy or mitigation frameworks. Exclusion criteria ruled out studies without economic relevance, those limited to engineering or environmental science without economic linkage, and non-peer-reviewed publications. Following an initial screening of approximately 200 academic articles, 98 studies were selected for in-depth analysis. These were coded into five thematic categories: (1) direct economic impacts, (2) indirect economic impacts, (3) Bangladesh-specific effects, (4) disaster vulnerability factors, and (5) mitigation strategies and post-disaster recovery models. This thematic structuring allowed for a focused and organized synthesis of the findings. The analytical framework was guided by two well-established models in disaster economics. (Okuyama, 2003) macroeconomic framework was used to analyze transmission mechanisms such as production loss, capital destruction, and consumption disruption. (Noy & Yonson, 2016) vulnerability-resilience model provided insight into moderating factors like governance quality, income levels, and infrastructure development. Together, these frameworks anchored the synthesis and ensured theoretical rigor in interpreting disaster impacts.

Results

Direct Impact on Economic Variables

Natural disasters cause severe disturbances in key economic sectors, with consequences felt at both local and national scales. The immediate effects are often wide-ranging, affecting not only physical infrastructure but also key macroeconomic indicators such as gross domestic product (GDP), trade balances, and employment rates.

Macroeconomic Disruptions

There is a significant correlation between economic conditions and the consequences of catastrophic events (Jaharudin et al., 2009). These events frequently lead to an immediate drop in economic production, deterioration in a nation's fiscal balance, worsening trade performance, and rising poverty levels—often accompanied by growing income inequality (Ibarrarán et al., 2009). Additionally, the magnitude of trade disruptions varies across countries, depending on their level of development and the strength of their governance structures (Limaye et al., 2021). Disasters such as floods, storms, earthquakes, and droughts trigger rapid shocks that destabilize production systems and market operations. Among these, floods tend to be the most devastating—particularly in agrarian economies like Bangladesh. Floods account for over fifty percent of disaster-related fatalities and nearly one-third of all catastrophic events annually (Douben, 2006). They generate hundreds of millions of dollars in immediate economic losses and cause extensive interruptions in global and domestic trade (Merz et al., 2021). Droughts also exert a direct adverse effect on agriculture, leading to sectoral decline and long-term productivity losses (Fomby et al., 2013). For example, each individual affected by a drought may contribute to a one percentage point loss in GDP (Raddatz, 2009). Earthquakes, too, have led to massive damages; between 1900 and 2012, earthquake-related economic losses totaled over US\$2.9 trillion (Daniell et al., 2012). Likewise, (Pelling et al., 2002) report that Hurricane Luis inflicted US\$330 million in direct damages on Antigua in 1995—an amount equivalent to 66 of the country's GDP. In Bangladesh specifically, the 2004 flood caused estimated asset and output losses of approximately US\$2.3 billion—equivalent to about 4% of national GDP (GFDRR, 2005).

Sectoral and Infrastructure Impacts

Immediate physical destruction from natural disasters directly disrupts human livelihoods and core infrastructure—especially in sectors heavily reliant on natural resources. These

events interrupt daily economic activity, destroy productive assets, damage farmland, and impair transport and utility systems (Dewan, 2015). When regional economic activity is disrupted, industry turnover drops, leading to a reduction in the area's overall GDP (Marin & Modica, 2017). The agricultural sector, in particular, is often severely affected, with significant consequences for national food security and macroeconomic stability (Sseruyange & Klomp, 2021). The 1998 flood, one of the most devastating, impacted approximately two-thirds of Bangladesh, resulting in losses approximating 5 percent of GDP. In 2017, flooding in northern and central Bangladesh impacted eight million individuals and inflicted significant damage to agriculture, leading to a substantial increase in food prices and a decline in the trade balance, with direct costs approximated at USD 750 million, roughly 0.3 percent of GDP (International Monetary Fund, 2019).

Labor Market and Social Disruption

Natural disasters also induce immediate stress on labor markets, contributing to increased unemployment and a surge in poverty rates. Inequality tends to worsen, especially where vulnerable populations suffer the greatest losses. Income disparity is significantly influenced by disaster-related losses (Tasri et al., 2022). These dynamics illustrate how disasters function not only as economic shocks but also as multipliers of inequality—disproportionately affecting marginalized communities and weakening overall development resilience. The 1998 catastrophic flood in Bangladesh led to short-term wage reductions across sectors, with agricultural laborers experiencing relatively smaller losses when transitioning to non-agricultural work. Despite their higher human capital, salaried workers were also significantly affected (Mueller & Quisumbing, 2011). Comparable patterns have emerged in South Asia—for example, the 2013 Uttarakhand floods in India severely disrupted local economies and tourism revenue. The recovery and reconstruction costs surpassed one billion US\$, with major impacts on district-level GDP and livelihoods (GFDRR, 2014; World Bank, 2014).

Indirect Impact on Economic Variables

The immediate damage from natural catastrophes is frequently evident, although the indirect economic effects can be extended and enduring. These long-lasting effects frequently modify economic developments, influence investment flows, and intensify social and regional disparities in developing countries.

Growth and Development Disruption

Natural disasters often trigger prolonged economic setbacks that inhibit recovery and suppress long-term growth potential. Catastrophes are a major contributor to poverty and can push individuals into or return to it. These events also hinder economic growth and have a substantial detrimental impact on GDP (Keerthiratne & Tol, 2017). On the other hand, natural catastrophes frequently obstruct long-term development processes, increasing vulnerability in economic stability and delaying the recovery process (Baade et al., 2007). Large-scale disasters have a detrimental impact on output in every nation, both shortly after the event and over time, unless there are drastic political changes (Cavallo et al., 2013). Natural catastrophes affect technology, the accumulation of social and tangible assets, and the availability of natural assets, resulting in long-term developmental constraints (Popp, 2006). Droughts obstruct agricultural development; storms affect agriculture and GDP in emerging nations; and earthquakes reduce expansion across industrial sectors (Panwar & Sen, 2019). A study reveals that natural catastrophes markedly hinder socio-economic development in rural villages of Bangladesh, attributable to inadequate education, low income, ineffective disaster management, and deficient infrastructure, resulting in diminished overall resilience (M. H. Kabir et al., 2022).

Short- and Medium-Term Economic Setbacks

These effects are not limited to long-term horizons. In the short term, natural disasters significantly reduce a nation's per capita income (Qureshi et al., 2019). Cyclones, in particular, depress national incomes below pre-disaster levels, with impacts persisting for years. (Hsiang & Jina, 2014) estimate that 90th percentile storm events reduce per capita incomes by 7.4 percent, with no full recovery even a decade later. Disasters also reduce productivity, slow capital accumulation, and disrupt technological adoption. These effects tend to be more intense in emerging economies than in developed countries, affecting more industries and producing deeper economic consequences (Loayza et al., 2012). Smaller and poorer nations are especially vulnerable, suggesting that disaster frequency poses a structural threat to economic growth (Cavallo et al., 2021; Kim, 2010). Climatic disasters in developing nations have been shown to reduce long-term growth trajectories (Klomp & Valckx, 2014).

Sectoral and Industry-Level Distortions

The economic shocks from disasters are not evenly distributed across sectors. (Okuyama, 2009) finds that the largest effects occur in manufacturing and services, rather than agriculture and mining. Similarly, (Kunze, 2021) highlights that tropical storms damage several sectors, particularly retail, hospitality, and agriculture. (Lenzen et al., 2019) show how these disruptions cause significant interruptions to economic output and labor flows, reducing both national and local productivity. The research indicates that natural catastrophes inflict the most significant interruptions on upstream sectors, including raw materials and primary production, particularly during storms and excessive temperatures, but downstream industries engaged in finished goods experience comparatively lesser effects (Liu, 2025).

Foreign Direct Investment and Investor Confidence

Inward foreign direct investment (FDI) is especially sensitive to disaster risk—particularly in low- and middle-income countries where investor confidence is closely tied to infrastructure and institutional resilience. The economic potential of these nations is more adversely affected due to higher concentrations of FDI stock (S. M. M. U. Ahmed, 2021; Wang et al., 2021). Following disasters, interruptions in energy, transport, and communication systems discourage reinvestment, raise insurance costs, and often result in capital flight.

Effects on Bangladesh

Bangladesh is constantly vulnerable to natural catastrophes owing to its low-lying landscape, higher population density, and significant dependence on agriculture. The nation endures recurrent floods, cyclones, and droughts, which combined result in considerable disturbances across several economic sectors. These effects are not only immediate but frequently enduring, influencing developmental outcomes and structural integrity.

Impact on Agriculture and Food Systems

The agricultural sector in Bangladesh is significantly impacted by floods, droughts, and cyclones, which adversely affect crops, livestock, and fisheries. Floods adversely affect individuals, crops, livestock, fisheries, and infrastructure, consequently influencing the socio-economic status of the entire country (Dewan, 2015). Labor markets in agriculture suffer temporary decreases while gradually stabilizing. On the other hand, outside of agriculture, markets suffer greater long-term effects (Mueller & Quisumbing, 2009). Depending on the region, natural disasters, including floods, droughts, cyclones, tides,

thunderstorms, hailstorms, waterlogging, tornadoes, etc., cause economic losses in livestock along with poultry industries (Biswas et al., 2019). "Research indicates that farmers and fish cultivators suffer the most damage, both in absolute and relative terms. Approximately one-third of their annual household income is lost due to flooding" (Brouwer et al., 2007). Alternatively, many hazards lead to a progressive decline in agricultural output and increase economic vulnerability (M. Hossain et al., 2016).

Damage to Infrastructure and Industrial Sectors

The scale of economic damage caused by disasters in Bangladesh is massive and well documented. Over the years 2000–2013, there were projected to have been 99.7 million individuals impacted by major sudden-onset catastrophe occurrences in Bangladesh, 8,351 deaths, and \$10.8 billion in cost resulting from damage and loss throughout all areas. Floods account for the bulk of the consequences in terms of both economic effect and impacted population—66 percent and 83 percent (Ozaki, 2016). The industrial, housing, and construction sectors often experience dramatic reductions in output and productivity. Housing services, agriculture, construction, and industrial operations are the most severely affected areas, with an aggregate production decline and significant revenue and employment losses (Haque & Jahan, 2016). Disaster floods adversely impact the economy nationwide; in certain regions, they result in a decline in output, while in others, they lead to a reduction in net worth, income, and employment, with output and employment losses particularly devastating to the agriculture sector (Haque & Jahan, 2015).

Labor Market and Income Effects

Natural disasters exert a deep influence on labor markets, wage levels, and consumption behavior across both urban and rural Bangladesh. Disasters like cyclones negatively affect income levels and change the expenditure behavior of rich firms (Mottaleb et al., 2013). According to the research, catastrophic events have a detrimental short-term impact on firm growth, as shown by increased sales (Rahman et al., 2023). Floods in particular have been linked to significant income and wage disruptions. Consequently, the effects of frequent floods on employment results, income, spending, and assets. All things considered, it discovered strong proof of detrimental effects on agricultural earnings and spending (A. Karim, 2018). While (Mueller & Quisumbing, 2010) noted that floods lead to long-term pay decreases, which significantly negatively impact non-agricultural employment markets. On the other hand, natural calamities adversely affect long-term economic development (Yiew et al., 2018).

Comparative Vulnerabilities and Structural Weaknesses

Bangladesh's disaster profile reflects trends also observed in other developing countries, where disaster vulnerability is compounded by structural weaknesses. For instance, natural catastrophes often have a greater economic impact compared to corresponding low-income and rising countries in the Pacific area, which frequently have underdeveloped disaster-resilient infrastructure, poor GDP expansion, and a significant dependence on subsidies and public loans (Lee et al., 2018). The study mentioned that residents of Hazaribagh Thana in Dhaka are particularly vulnerable to earthquakes because of the area's structural poverty, inadequate infrastructure, and restricted access to emergency services. Lack of skills, uncontrolled urban development, and subpar housing all exacerbate this, resulting in a multi-layered risk environment (Mahbubur Rahman et al., 2023). In summary, natural catastrophes in Bangladesh cause widespread damage across agricultural systems, industry, labor markets, and infrastructure. These impacts are persistent and multidimensional, not only disrupting current output but also undermining economic resilience and long-term development. The Bangladeshi case underscores how

structural vulnerabilities intensify the indirect and cascading effects of disasters—making economic recovery especially difficult in hazard-prone developing countries.

Factors Influencing Natural Disasters

The economic and social consequences of natural catastrophes are influenced not just by the event's physical attributes, but also by the structural, institutional, and environmental factors that dictate a nation's susceptibility and capacity for reaction. Comprehending these aspects is crucial for evaluating long-term economic risk and creating suitable mitigation solutions.

Structural and Demographic Vulnerabilities

A nation's structural characteristics—such as income level, geography, urbanization trends, and economic model—play a defining role in determining the scale of disaster impact. Natural catastrophes may become more detrimental as a result of climatic shifts, moves of people to hazardous regions, and rising worldwide productivity and expenditure (Lazzaroni & Van Bergeijk, 2014). Catastrophes happen everywhere, but they have greater consequences in developing nations because of their geographical position in areas that are particularly vulnerable to natural disasters, as well as the various forms of economic and social interactions, political issues, and cultural weaknesses present there (Alcántara-Ayala, 2002). A nation's susceptibility to natural catastrophes is usually determined by its economic model and degree of growth (Khan et al., 2023). The interplay between limited economic diversification, reliance on agriculture, and demographic pressure further deepens the exposure of developing countries to disaster-related shocks. Household-level vulnerability to cyclones and storm surges in coastal Bangladesh is strongly influenced by socioeconomic and physical conditions. Poorly built homes, low education, and limited access to early warnings or disaster preparedness increase susceptibility, whereas stronger infrastructure and preparedness reduce risk—highlighting the need to address internal vulnerabilities for effective disaster management (Nazir Hossain, 2015).

Institutional Quality and Governance

The presence or absence of sound governance and institutional quality significantly alters the trajectory of disaster outcomes. Natural catastrophe mortality tolls plus total economic damages are significantly impacted by government integrity and a smaller chance of expropriation (Raschky, 2008). Human development factors, such as education level, income per capita, population density, and human capital, significantly influence the severity of damage caused by natural disasters in Southeast Asian countries (M. R. Islam & Khan, 2019; Padli et al., 2018). Countries with transparent and accountable public systems are generally more effective at implementing pre-disaster planning and post-disaster recovery. Institutional roles in disaster risk reduction across pre-, during-, and post-cyclone phases in coastal Bangladesh vary in effectiveness, with NGOs and CPP volunteers performing better in early warning dissemination. However, widespread public disengagement and post-disaster inefficiencies caused by bureaucratic barriers, corruption, and nepotism undermine resilience—highlighting the urgent need for policy reform and community trust in institutional disaster response (Paul et al., 2022). Additionally, (Uddin et al., 2020) mentioned that effective disaster-loss reduction in coastal Bangladesh hinges on interactive governance, decentralization, and adherence to national policy frameworks. However, widespread corruption, exclusionary practices, and weak accountability at the local level continue to obstruct the implementation of disaster management policies, undermining community resilience.

Financial System and Economic Recovery

Affected economies' recovery route is influenced by the imbalance across workforce, assets, and ultimate demand, which are some of the main restrictions that impact and shift economic stability and rebound (Li et al., 2013). Additionally, nations with lower established financial sectors are more susceptible to natural calamities and negatively affect medium-term economic growth (Keerthiratne & Tol, 2017; McDermott et al., 2014). Natural disasters negatively affect GDP and agricultural growth globally, with disproportionately greater impacts on developing countries due to structural vulnerabilities. The study underscores the need for disaster risk financing, stronger preparedness policies, and educational investment, while also noting that high population density raises post-disaster recovery costs (Naoaj, 2023).

Climate and Environmental Multipliers

Climatic trends and environmental shifts increasingly act as multipliers of disaster risk. A rise in stream floods due to a lack of extensive structural adjustment may lead to an increase in aggregate economic costs for the global economy (Willner et al., 2018). Certain types of catastrophic events can be influenced by climate change in some countries, if not worldwide (Neumayer & Barthel, 2011). These shifts particularly threaten nations with inadequate environmental governance, placing pressure on both human systems and ecological resilience. Bangladesh's vulnerability stems from the compounded impacts of climate change and recurring natural disasters, particularly in coastal regions. Rising sea levels, extreme weather, and shifting precipitation patterns have intensified socio-economic and infrastructural risks, leading to displacement and systemic losses (K. M. T. Kabir et al., 2024). Similarly, (Das et al., 2024) mentioned that Bangladesh's response to climate change reflects both notable progress and enduring challenges. Despite advancements in disaster risk reduction and mitigation strategies, safeguarding vulnerable populations remains difficult due to socio-economic constraints, adaptation shortcomings, and governance limitations. Ultimately, the scale of disaster impact depends not only on the hazard itself but on the structural vulnerabilities, governance quality, and environmental dynamics that shape national resilience. These multidimensional factors jointly determine whether a disaster becomes a temporary shock or a long-term developmental crisis.

Mitigating the Effects of Natural Disasters

Effective mitigation techniques are essential for diminishing the economic and social repercussions of natural catastrophes. This literature emphasizes the diverse financial, institutional, infrastructural, and community-oriented strategies employed to facilitate risk mitigation and recovery in disaster-affected regions. These procedures are especially pertinent for nations such as Bangladesh, where frequent natural catastrophes impede sustainable development.

Financial and Informal Buffers

Remittance inflows have emerged as a key informal buffer against disaster-related shocks. Nations with a higher emigrant stock relative to the overall population of the resident country see remittances rise in defense of catastrophic events. Despite accounting for the potential for self-selection, individual household spending was greater for remittance-receiving families in the aftermath of the 1998 floods in Bangladesh (Mohapatra et al., 2012). In contrast, foreign aid presents a more complex picture. While often vital for immediate relief and reconstruction, it may create unintended disincentives for proactive disaster preparedness. Prior foreign aid inflows reduce the beneficiary's incentive to implement preventative steps that minimize the probability and the effects of a catastrophe

on communities (Raschky & Schwindt, 2016). In Bangladesh's coastal communities, household catastrophe resilience is mostly dependent on financial, natural, human, and physical resources. However, as part of a broader resilience and development plan, it is imperative to improve asset bases and livelihood prospects due to the pervasive poverty and vulnerability in these areas (R. Islam & Walkerden, 2022). To deal with disasters, households in Northern Bangladesh utilize a combination of institutional microfinance and informal loans, weighing accessibility and cost. The study highlights the necessity of lowering non-monetary obstacles in financial products in order to improve post-disaster economic recovery and fortify rural emergency lending markets (Rabbani & Hasan, 2021).

Institutional and Public Sector Interventions

Government institutions and public spending are critical in managing disaster response and promoting long-term resilience. The negative impact of catastrophes can be mitigated by democratic structures and global accessibility (Felbermayr & Gröschl, 2014). Various structural mitigation efforts have been shown to be effective in Bangladesh and similar contexts. Floods, cyclones, and tornadoes can be minimized with the use of emergency homeless shelters, advanced warning systems, and both structured and unstructured barriers, canals, and other development projects (Dewan, 2015; Shrestha & Takara, 2008). Public expenditure and diverse investment can assist the industrial and infrastructure sectors in rebounding after flood devastation (Haque & Jahan, 2015).

Regulatory and Infrastructure-Based Strategies

Land use regulations also show potential as proactive mitigation measures. Apart from drought, stringent land planning and development regulations are a particularly efficient protection technique against all main consequences (Benson & Clay, 2004). Additionally, proactive investment strategies can play a catalytic role in promoting resilience. Improvements to the construction sector and foreign direct investment promote economic growth (Khan et al., 2023). On the other hand, a higher degree of economic growth, education, investment, government expenditure, and openness to foreign commerce correlates with less damage from natural catastrophes (Padli et al., 2018). In developing nations, advancements in social, economic, human capacity, institutional, and infrastructural sectors enhance resilience to natural catastrophes, therefore substantially mitigating post-disaster damage (Kusumastuti et al., 2014). A regional assessment of South Asia, encompassing Bangladesh, reveals deficiencies in energy, transportation, and financial infrastructures as significant weaknesses. The results underscore the imperative for legislative and technical measures to improve resilience and promote regional collaboration (Mukherjee et al., 2023).

Cultural, Community, and Social Capital Strategies

Mitigation techniques encompass not only formal institutions but also cultural knowledge and social networks that bolster resilience at the household and community levels. Therefore, to alleviate the socioeconomic impacts and vulnerability to catastrophic occurrences, traditional knowledge and cultural practices may be integrated with governmental and private initiatives (Dewan, 2015). Community support and social trust are particularly essential in aftermath scenarios. Social capital is vital for the post-cyclone recovery processes of individuals, households, and communities (Masud-All-Kamal & Monirul Hassan, 2018). At the individual level, household-level asset reinvestment plays a key role in recovery. On the other hand, reinvestments in valuable resources, both individually and collectively, demonstrate a significant degree of resilience against asset damage due to catastrophic events (Gignoux & Menéndez, 2016). In flood-prone Sunamganj, local institutions—both official and informal—are essential in

establishing social learning platforms that promote collective action and enhance community resilience. This method cultivates self-sufficiency and diminishes dependency on external assistance, in accordance with the tenets of social protection and inclusive adaptation (Azad et al., 2022). In Bangladesh's vulnerable communities, social exchange dynamics and the sharing of community knowledge have a major impact on resilience and readiness for disasters. By emphasizing the social aspects of vulnerability and adaptive capacity, we find that trust and reciprocity emerge as important motivators that influence collective risk management practices (Musabbir et al., 2023).

Together, these strategies underscore that disaster resilience in Bangladesh depends on an ecosystem of formal governance, financial flows, physical infrastructure, and localized social capital. By reinforcing this multidimensional approach, nations can better reduce vulnerability and accelerate sustainable recovery.

Discussion

The synthesis of disaster economics in Bangladesh underscores a recurring dilemma: while the country experiences some of the most severe economic consequences of natural hazards, its structural weaknesses continue to constrain adaptive capacity. This duality highlights that disasters are not simply exogenous shocks but outcomes mediated by existing vulnerabilities in governance, infrastructure, and socio-economic systems (Boustan et al., 2020). The reviewed evidence shows that both direct and indirect impacts—ranging from GDP loss and agricultural decline to wage stagnation—are intensified by institutional fragility and demographic pressures (M. Hossain et al., 2016; Keerthirathne & Tol, 2017). A critical observation emerging from this study is that the persistence of economic losses often outweighs the immediate damage. For example, floods not only disrupt agriculture and infrastructure in the short term but also generate wage depressions and long-term reductions in household income (Mueller & Quisumbing, 2011, 2010). This suggests that disaster recovery in Bangladesh should be understood less as a return to pre-disaster conditions and more as a transformation shaped by structural inequality. The recurrence of poverty traps following shocks further reinforces the notion that disasters exacerbate pre-existing socio-economic disparities rather than acting as temporary disruptions (Sodhi, 2016; Tasri et al., 2022).

Another important determinant is institutional capacity. The efficacy of mitigation efforts is weakened by pervasive bureaucratic inefficiencies and governance issues, even in the face of the deployment of early warning systems and disaster management frameworks (Paul et al., 2022; Uddin et al., 2020). This supports the more general theoretical claim that the effectiveness of governance and the inclusivity of institutions determine the results of disasters (Noy & Yonson, 2016). Without addressing systemic corruption and weak accountability, policy frameworks risk being relegated to symbolic measures rather than drivers of resilience. Financial buffers, such as remittances and microfinance, offer important but partial protection against disaster-induced shocks (Mohapatra et al., 2012; Rabbani & Hasan, 2021). Yet, the reliance on informal coping strategies illustrates the inadequacy of formal financial institutions in extending adaptive capacity to vulnerable populations. Similarly, while foreign aid contributes to short-term recovery, its potential to weaken incentives for proactive preparedness complicates its long-term utility (Raschky & Schwindt, 2016). These dynamics reveal that resilience requires not only external support but also endogenous strengthening of local financial and institutional systems. Finally, the compounded role of climate change magnifies the stakes for Bangladesh. Rising sea levels, recurrent floods, and shifting rainfall patterns intensify existing vulnerabilities and increase the costs of recovery (Das et al., 2024; K. M. T. Kabir et al., 2024). This indicates that disaster management cannot remain reactive. Instead, integrating

climate adaptation with socio-economic development is essential to prevent cyclical disruption of growth trajectories. The discussion illustrates that natural disasters in Bangladesh function less as isolated shocks and more as systemic stressors that reveal—and exacerbate—structural fragilities. Policy must therefore pivot from short-term relief toward structural reform, governance strengthening, and integrated resilience-building if long-term development goals are to be sustained.

Conclusion

Natural catastrophes have been shown to cause significant economic repercussions globally, as evidenced by comprehensive research. This review synthesized findings across five key thematic domains: direct economic impacts, indirect consequences, Bangladesh-specific vulnerabilities, structural and institutional factors, and mitigation strategies. The economic extent of disaster-related damage is closely linked to a nation's infrastructure, level of development, and disaster management capacity. These events generate both immediate shocks—such as infrastructure damage, agricultural loss, and rising poverty—and long-term disruptions to productivity, employment, and income. Developed nations typically demonstrate stronger recovery from both immediate and prolonged shocks due to their advanced infrastructure, stable economies, robust governance, and well-established financial sectors. In contrast, developing countries often experience disproportionately severe outcomes—reduced GDP, productivity losses, unemployment, and income declines—that hinder long-term development trajectories. Bangladesh exemplifies these challenges. Immediate impacts have included agricultural disruption, employment instability, infrastructure loss, and increased human vulnerability. Long-term effects such as wage stagnation, declining agricultural output, and disrupted consumption patterns have reinforced economic precarity. Factors such as weak infrastructure, low human development indicators, unstable governance, underdeveloped financial markets, and a heavy reliance on agriculture heighten the nation's disaster-related economic risks. Nonetheless, the literature identifies several levers for improving resilience. Structural improvements, institutional reform, enhanced remittance flows, coordinated foreign aid, public investment in preparedness, and capacity-building in human development offer tangible pathways for reducing economic losses and supporting more robust recovery. Future research should focus on sector-specific dynamics—especially within agriculture, informal labor, and rural infrastructure—to deepen our understanding of how economic vulnerabilities evolve across time and space. In particular, granular studies that quantify disaster impacts at the regional and household levels can help inform more precise, targeted policy frameworks that strengthen disaster resilience in Bangladesh.

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