



Adverse Effects of Environmental Disasters in Bangladesh: Rethinking Existing Environmental Governance

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Abstract

Environmental disasters kill around 12.6 million people year, 25% of all deaths worldwide, according to the UNEP (2024). Bangladesh ranks sixth in disaster risk, according to the Global Climate Risk Index (2021). This shows its vulnerability to climate change and natural disasters. Bangladesh's low-lying terrain and funnel-shaped shoreline make it vulnerable to seasonal flooding, cyclones, and tidal surges. Infrastructure failure, high groundwater arsenic levels, waterlogging, soil and water salinity, and pollution exacerbate these issues. Floods, droughts, cyclones, and heat waves continue to plague Bangladesh. According to the World Bank (2024), catastrophic calamities kill many, displace many, and cost a lot. Bad environmental governance and institutional coordination make this vulnerability worse, emphasizing the need for system improvements. This study will identify Bangladesh's main environmental governance challenges and provide ways to improve disaster prevention, preparedness, and mitigation.

Keywords: International Environmental Law, Environmental Governance, Environmental Disasters, Disaster Management.

1. Methodology

This is a result of doctrinal research examining the previous and existing legislations, policies and plans of Bangladesh regarding addressing and preparing for and mitigating the loss of environmental disasters while comparing them with the approaches taken worldwide which have produced better results dealing with similar circumstances. The research also examines different instances of environmental disasters and policy failures causing those disasters or failing to prepare for it or mitigate the loss of those disasters while suggesting changes in the policies and mechanisms. It also examines the international frameworks and conventions to determine the ability of Bangladesh to fulfill the commitments and to locate where the shortcomings are and how to overcome them.

2. Objective & Significance of the Study

The existing research and literature on the environmental disasters and governance in Bangladesh does not address specific instances of environmental disasters and where the governmental actions went wrong to deal with them, nor do they attempt to analyze national plans for prevention and mitigating the loss of environmental disasters. This paper attempts to contribute to that lacuna and it is a modest attempt to progressively contribute to the existing research and literature on the matter.

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This paper critiques Bangladesh's catastrophe mitigation and rehabilitation, environmental decision-making and enforcement frameworks. To identify environmental governance issues and disaster causes. The study compares government environmental disaster mitigation methods. This research evaluates scholarly evaluations of international legal requirements and local adaption procedures and suggests formal compliance and practical success alternatives.

3. Literature Review

Environmental governance and disasters are studied in law, economics, and science. Bangladesh's climate vulnerabilities have made it difficult to meet international responsibilities, according to most legal literature. Bangladesh's climate adaption infrastructure has also been criticized, and authors have called for a more concerted effort to prioritize poor areas.

3.1 Nexus Between Environmental Governance and Environmental Disaster

Environmental Disaster

Disasters are big, fast, and unanticipated changes to a social system that it can't entirely manage. There aren't many disasters in a location and time. (Rahman, Rahman, and Rahman, 2017) Natural or man-made disasters can cause environmental calamities. In case of Bangladesh, a lot of natural disasters as well as disasters resulted from human conducts are witnessed in number.

Environmental Governance

Environmental governance encompasses laws, regulations, and organizations that conserve and use natural resources. "Norms, beliefs, behaviors, and organizational tactics utilized by citizens, organizations, social movements, and varied interest groups to communicate their interests, protect their distinctiveness, and assert their natural resource access and user rights and responsibilities. To balance their demands, interests, and environmental interactions at the correct scales, stakeholders need formal and informal structures, rules, procedures, and processes for decision-making. Treaties, organizations, policy instruments, financial mechanisms, laws, practices, and conventions oversee global environmental protection. (Tacconi, 2011). Here the role of environmental governance is examined to find out where the failure of environmental governance caused the environmental disasters or where the failure to take adequate preparation or mitigation of loss resulted in bigger disasters.

3.2 Role of Environmental Governance in failure to redress adverse effects of environmental disasters

Climate injustice is best seen in Bangladesh. Bangladesh ranks eighth in extreme weather and climate change risk in the 2024 World Risk Index. In 2022, it released 0.3% of global greenhouse gases. Bangladesh lost \$3.72 billion due to 185 extreme weather occurrences induced by climate change between 2000 and 2019. We'll examine Bangladesh's recent environmental disasters to understand how poor management caused them.

Instance 1

Heavy monsoon rain in northeastern Bangladesh produced a flash flood in Sylhet Division on May 30, 2024. Over 51,000 individuals sought refuge in 1,685 shelters after disasters affected over two million people. Sylhet District was 75% inundated, and almost half of its crops were destroyed. (UNICEF Bangladesh, 2024). This shows that Bangladesh is not prepared for a flood of this scale. Rescue and rehabilitation approaches are inadequate and lacks coordination.

Instance 2

The Bangladesh Meteorological Department (BMD) reported severe heat waves exceeding 40°C in various areas on April 27, 2024. From April 21 to 27, 2024, Bangladesh closed schools and other facilities due to the heat wave. Everyone stayed indoors and did nothing unnecessary. (Bangladesh Red Crescent Society, 2024). Shutdown caused by such heatwaves are unprecedented and shows that the administration failed to foresee such circumstances resulted into lack of preparation to face such a unique environmental situation.

Instance 3

A Strong Cyclone, Bangladesh's most disastrous storm was Remal. The tropical cyclone visited Bangladesh and West Bengal in May 2024 and caused death of 84 people, 16 in Bangladesh and 65 in India. Nearly 30 million Bangladeshis and many West Bengalis lost power. (Community Initiative Society, 2024). Disasters such as this is not unprecedented or unique to this region, but the failure to early detection, warning and preparedness to face such disasters causes loss of life and property more than it should be every time.

Instance 4

Over 120 people died in 2007 landslides and slope collapses caused by heavy rain. The Hill Tracts are vulnerable to calamities because land has been turned into tobacco and rubber industries, indigenous people have been forced to leave, and Bengali immigrants have arrived unprepared. Since the 1960s, many nations have financed these programs. Losing trees erodes soil. Many know this, yet Hill Tracts problems could have been averted. In 2007, the South Asian Association for Regional Cooperation Disaster Management Center reported that irresponsible tree and slope cutting increased landslides. The report advised implementing rules and maintaining the Hill Tracts forest to prevent disasters. Those rules were ignored. Instead of tackling deforestation, governments blamed others. Illegal forest cover removal is prohibited by the Bangladesh Environment Conservation Act but the government rarely prosecuted those who cut down trees, constructed buildings, or turned woods into fields. (Human Rights Watch). Lack of enforcement and intent to save the environment caused the disaster in this instance. This shows if effective monitoring could oversee the activities and report noncompliance and strict compliance to the legal and policy requirements could have been ensured in this case, these disasters could have been averted.

These four instances show Bangladesh's environmental management failures left people unprepared for disasters. We can see that floods, cyclones, river erosion, and other natural disasters have increased. Timely Identifying and addressing causes to avoid disasters were missing, too little time was given to prepare affected people. Authorities failed to rescue

victims. Ministries, departments, local authorities, and enforcement agencies failed to communicate and coordinate, making such occurrences harder to prevent. To avoid similar circumstances, we must identify Bangladesh's environmental governance issues.

4. Bangladesh's Particular Environmental Governance Challenges

Due to its location, hydro-geological features (floodplains and low sea level), and social and economic factors (large population, poverty, and dependency on natural resources), Bangladesh is one of the most environmentally vulnerable nations. Climate change hurts it. Diversity in Bangladesh's geography suits traditional and modern land use. Complex ecosystems make bases and resources vulnerable and valuable. Due to its seriously dense population, sluggish economic growth, inadequacy of institutional infrastructure, substantial reliance on agriculture and agricultural commodities, geographic situation, and other factors, the country's economic growth and living standards are low.

Bangladesh had to conserve the environment under the 1972 Stockholm mandate. Bangladesh passed the 1973 and 1977 Water and Environment Pollution Control Ordinances after Stockholm. National environmental recognition and promotion began with the 1992 Environmental Policy. Many groups influence environmental policy. Officials from government and business devised environmental policies. In 1992, Bangladesh adopted an environmental policy. Environmental policy goals include ecological balance, disaster prevention, and pollutant management. Bangladesh is incorporating climate change mitigation into its economic goals. Most agree climate change hurts Bangladesh's growth. After COP7 of the UNFCCC, Bangladesh's MoEFCC launched NAPA in 2005. (Islam,2018). For this reason it is of utmost significance that Bangladesh take consideration of the climate change into their economic and development policies, without which they can not overcome the losses and future losses that would hurt their goals.

Bangladesh's central government makes choices and local governments implement them, which is wrong. Unrealistic policies and procedures result from poor bottom-up decision-making. However, public, decision-makers, media, essential stakeholders including civil society and non-state actors have few good ways to communicate during decision-making. Because non-government stakeholders and beneficiaries don't care about environmental conservation, policy implementation is harder. Environment policy ignores climate change's harms. Bangladesh's MoEFCC and DoE rarely address environmental regulations. Ministry skills are insufficient.

The Department of Environment and Ministry of Environment, Forest, and Climate Change lack funds and staff to address environmental issues. Lack of transparency and public participation has made MoEFCC and DoE environmental governance problematic. Bangladesh has poor environmental governance because its institutions are weak, its staff is untrained, people don't know about the issues, communities aren't involved in resource management, research isn't done, and governments, UN agencies, NGOs, the corporate sector, and civil society don't work. Fixing this requires time, money, effort, and most crucially, international diplomacy.

International response to a catastrophic environmental calamity is missing. Long divides hamper global ecosystem care. Bangladesh has environmental governance issues too: Budget constraints, economic inequality, and disobedience with global environmental agreements lead environmental standards to fail. Lack of finance and direct investment complicates environmental management. Governments, UN agencies, NGOs, companies, and civil society don't cooperate on environmental issues.

Weak environmentalism increasingly impacts commerce, farming, health, peace, security, and long-term economic progress. There is no coordination with underprivileged countries on these concerns. International trade, money, and environmental control clash. Market errors and distortions harm the environment and restrict environmental action. Political will keeps environmental issues out of macroeconomic institutions like the WTO. GEF climate change aid is restricted for poor states.

Recent decades have seen Bangladesh and other nations develop international environmental accords to address global environmental challenges. (Shearer, 1994, 398–402). Environment treaties were largely proposed and signed after 1972. Before the UN Stockholm Conference on the Human Environment, several were created. To prevent environmental damage and ensure sustainable growth, world leaders spent years building these treaties. Even while environmental accords are growing rapidly (Sands, 1995, p. 105), many state parties, especially rising ones, have not adhered. Bangladesh signed the 1987 Montreal Protocol, 1985 Ozone Convention, 1992 Climate Change Convention, and 1992 Biodiversity Convention. International environmental treaties number over 44. (Islam, 1996) Bangladesh actively negotiated the 1992 Rio and 1994 Desertification Conventions. The nation achieved broad and specific goals with limited resources. International environmental agreements provide Bangladesh rights and duties. Their goal is legislation and governance change. Here DOE follows MOE guidelines. Nodal agency Ministry of Foreign Affairs assists MOE in international activities. MOE discusses domestic and international issues with Cabinet and foreign firms. Administrative departments at the DOE oversee global climate change, ozone depletion, biodiversity, and national environmental efforts. These groups monitor Bangladesh's treaty implementation and interaction with secretariats. The Treaties oblige them to create and implement programs to help the country reach its short- and long-term goals.

The Environment Conservation Act of 1995 (Farooque & Hasan, 1995, pp. 720–728) gives the DOE Director General (DG) specific goals. The 1995 Act achieves various goals. Stated "for the protection, improvement of environmental standards, and management and reduction of environmental pollution." Section 4 allows the Director General to act fairly and diligently to protect the environment. (1995, Bangladesh, §4) The 1995 Act gives DOE extensive environmental agreement enforcement power. However, critical limits strengthened it.

British colonial rule vertically organized Bangladesh's government into ministries and departments. Minimal horizontal ministry coordination. Ministries that only monitor symptoms fail to handle complicated environmental issues because they need a plan. Since many sectoral ministries manage resources, biodiversity protection is severely affected. Each ministry has a big impact. The DOE has no structural advantages over other government departments. It must cooperate with other government agencies, not force

them. It sometimes supports environmental policies. Board of Investment is one of three key corporate groups. Only this one needs company owners to secure a DOE environmental clearance certificate before starting work. BEPZA and DEPZA work individually. (Reazuddin, 1998, 66). This absence of leverage of the ministry and the department over other departments and agencies prevent the adequate measures required to be taken to prepare warn and mitigate the losses of environmental disasters.

5. Findings & Limitation of the Study

This paper identifies fundamental challenges to developing effective environmental governance in Bangladesh to reduce natural disasters. The research is mostly based on available existing literature on the matter which is not adequate since environmental governance and management of environmental disaster is often overlooked in country like Bangladesh. The studies of different instances do not cover all the area of environmental disaster faced by the country, nor does the analysis cover all the possible areas that can be improved, however the research points out various problems in the environmental governance which are solvable without scrapping the whole mechanism and suggest changes that could make drastic and visible changes in this matter.

Firstly, due to a lack of grassroots input, top-down decision-making first created norms and processes that didn't reflect grassroots conditions. Without community engagement, environmental protection efforts are harder to accomplish. Because of poor communication, the public, government, media, civil society, and non-state actors don't react to policies either.

Second, neither the MoEFCC nor the DoE possessed environmental governance and preservation capacity. Due to opaque decision-making and citizen exclusion, the MoEFCC and DoE conducted environmental governance badly. Bangladesh's environmental governance is weak due to a lack of research, awareness, institutional capacities, untrained staff, community involvement in resource management, and coordination among government, UN, NGOs, the commercial sector, and civic society.

Third, these improvements will require time, money, energy, and, most importantly, diplomacy. Lack of finance, obstacles, intertwined economies, and inadequate implementation of international environmental treaties make environmental regulations ineffective. Environmental management plans are hard to implement since governments, UN agencies, NGOs, corporations, and civil society don't cooperate. More individuals realize environmental challenges affect health, peace, security, sustainable economic growth, and other areas of life. However, disadvantaged nations with similar issues rarely cooperate.

Lastly, Environment gets different treatment than trade and economy. Lack of political will makes it hard to include environmental problems into macroeconomics because market failures and distortions increase environmental issues and make environmental solutions harder to implement. Climate change funding from the Global Environment Facility (GEF) is insufficient for developing nations. DOE couldn't enforce environmental laws because it couldn't force federal agencies to comply.

6. Recommendations for Strengthening Environmental Governance in Bangladesh

Strengthening Legal Frameworks

Bangladesh must strengthen environmental legislation. Environmental regulations must be revised to address new issues like climate change, and biodiversity protection must be improved. Switzerland supports institutions that improve international environmental law and practice and advance them. Switzerland helps UNEP organize and make decisions by setting environmental policy goals. Swiss Federal Office for the Environment (FOEN), date. Changing the law should be used to unify global environmental policy and improve governance.

Improving Enforcement Mechanisms

To improve enforcement, the DOE and other agencies must be stronger. Training, resource sharing, and collaboration with NGOs and civic groups can achieve this. Environmental rights and responsibilities must be communicated through public awareness programs. An examination of 30 National Green Tribunal cases from India demonstrated that specialist courts can speed up environmental issues.(Sharma,2020) That research revealed that corruption and a lack of legal options make it difficult to enforce laws in India and Nigeria. Bangladesh can create special courts with environmental experts as judges and lawyers. This could reduce corruption in civil litigation forums and increase environmental remedy efficacy, making environmental governance more accountable and trustworthy.

Promoting Sustainable Development

When planning growth, the environment has to be considered. Manufacturing, farming, and city planning must be sustainable. Promoting renewable energy and waste reduction can assist sustain the future.2030 Agenda with Sustainable Development Goals included 169 targets to enhance living standards and protect the environment, especially in impoverished nations, and raise standards in countries. The SDG Index and Dashboard illustrates how far the world has gone toward the objectives, Sweden (84.5), Denmark (83.9), Norway (82.3), and Finland (81) excel in social and economic aspects .(Active Sustainability, n.d). Bangladesh may use these nations' methods to address social and economic issues, achieve sustainable development, and balance environmental protection and development. This could meet Bangladesh's socioeconomic needs and determine its future, a major improvement.

Strengthening Community Participation

Getting locals involved in environmental governance helps protect resources. To make sure that the community has a say in environmental decisions, public participation has to be better. A survey of 300 Kenyans and Indians revealed that public awareness substantially enhances adherence to environmental legislation.(Prameela & Sundaram,2024) For people to be able to take part in community health issues, they need to be involved in development and have the right tools and equipment. (Mketo, Ringo, Nuhu, Mpambije, 2022) Bangladesh should collaborate with local community leaders to promote awareness of environmental catastrophes and ways to make environmental governance better. This makes it easier to follow the rules and enforce them.

International Cooperation

Cross-border environmental issues require international cooperation. Bangladesh must improve diplomatic relations with its neighbors to effectively manage shared resources. Environmental projects in the region facilitate collaboration and knowledge sharing. European governments launched the European Neighbourhood Policy (ENP) in 2004 to foster a shared-values relationship with EU neighbors. Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria, and Tunisia are Southern Neighborhood and Eastern Partnership members. They share environmental issues, making them environmentally relevant. Bangladesh, India, Pakistan, Sri Lanka, Nepal, and other South Asian nations should employ this strategy to reduce environmental disaster damage. This shared responsibility will aid regional environmental disaster preparedness, prevention, and mitigation. Bangladesh's legal and institutional issues with environmental agreements must be examined.

7. Change in the function of MoEFCC, DoE and relevant stakeholders

To establish a complete database and management information system (MIS) that will support all national environmental policies, the MoEFCC and DoE must decrease and adapt to climate change. Current environmental policies must consider climate sensitivity. We need to accelerate talks with India and provide the Joint River Commission better policy guidance to address transboundary water issues. Community members must inform stakeholders to get them interested. These projects would also reveal public opinions on climate change, adaptation, and the environment. Institutions, administration, and organizations must change to improve political decisions. The duties, powers, and responsibilities of national climate change committees and their members would be examined first. Sectoral agencies will collaborate on environmental governance. The best approach must be devised to guarantee local governments manage the environment and natural resources. Through information gathering and dissemination, policy consultation, implementation, assessment, and monitoring, and environmental justice, stakeholders can improve environmental governance. NGOs and other civil society groups must aggressively promote international accords as governance stakeholders and tools to bring countries together. Civil society groups are UN "partners" in environmental talks since they provide services and implement plans. The mechanism under UN, including international organizations regarding finance and development and other intergovernmental organizations and forums, might help Bangladesh implement environmental governance rules faster by engaging with non-governmental groups.

Revising Disaster Management Plans

Climate change, unsustainable development, rapid urbanization, and population increase worsen natural disasters in Bangladesh and other Global South countries. COVID-19 demonstrated our society's good and bad. In a divided and unjust society, climate change mitigation cannot protect millions of Bangladeshis from terrible natural disasters. Bangladesh and other nations must prioritize climate adaptation, innovative technologies, cooperation, societal transformation, and resilience. Disaster management strategies should be reviewed often to account for pandemics like infectious disease spread. These measures must protect the expanding number of migrants, IDPs, and refugees. Strategies should focus

on men and women's warning and threat reactions. Infrastructure and early warning systems cost a lot to reduce disaster risk. (Sammonds, Shamsudduha, and Ahmed,2021)

Strengthening Early Warning Systems

Early warning systems (EWS) for storms, wildfires, and cyclones save lives. (Benito Corella, Rodriguez-Lloveras, Brauer, and Valero-Garcés, 2014) Four pieces make up an effective early warning system: finding, tracking, and predicting risks; analyzing risk; quickly sending out storm alerts; and putting disaster planning and response plans into action. Several national and local agencies need to work together to make this happen. (Golnaraghi, Douris,2009)

8. Shift in the role of the judiciary in Bangladesh to strengthen environmental governance

The Environment Court Act 2000 created a separate environment court to force litigants to prioritize environmental issues to speed up trials. The court may assist judges learn, lower their standing, and improve and standardize case law. Judges should have access to study and research. By including non-governmental groups in policymaking and elevating environmental justices, the government may encourage public interest environmental lawsuits. Even with these goals, the court can improve Bangladesh's environmental governance. Bangladesh blends justice, courts, and law. The Constitution and courts are not the supreme authorities in most common law countries with codified constitutions. Supreme Court judges interpret laws. Similar to the US, Razzaque (2000) claims that Bangladeshi judges are more likely to make unpopular, beneficial verdicts since they don't become involved in politics. After the court included environmental preservation in the right to life, people expected the courts to get more involved in environmental issues. (Razzaque,2000)

Although the courts in various instances stressed harmonious interpretation for environmental protection while acknowledging that government law is not immediately enforceable in court. The Flood Action Plan (FAP) case (*Dr. Mohiuddin Farooque v. Bangladesh*, 1997) that case showed how the court interpreted core rights from the preamble, policy statements, and constitution. The High Court and Appellate Division broadened the right to life to encompass environmental protection as well. Sustainable natural resource use and national legislation underpin South Asia's long-term growth. (Brundtland, 1987) The IUCN defines "sustainable development" as a standard of living that is socially desired, economically achievable, and ecologically sustainable for generations. (IUCN World Conservation Union, 1993) This notion seeks a balance between environmental protection and profit. (UNGA, 1998). Bangladeshi courts have indirectly promoted sustainable development by favoring donor-funded projects. At least four environmental cases in Bangladesh have resulted in pollution reduction injunctions (Razzaque, 2000). (*BELA v. D.G. of Bangladesh Medical and Dental Association*, 1994; *M. Farooque v. Bangladesh*, 1996, 1997). Bangladeshi courts have not taken suo motu environmental steps like Indian courts (see *In re: Letter*, 1990 and 1994; O.P. No. 6721 of 1992; AIR 1992 Pat 86; W.P. No. 22598 of 1993).

Under similar circumstances, the Indian courts ordered the tanneries to close without

conditions and move (*M.C. Mehta v. Union of India*, 1997), pay for damage repairs, and take required procedures. Also, they urged the appropriate Ministry to convey environmental information through media. (*Research Foundation for Science, Technology, and Ecology v. Ministry of Agriculture & Others*, 1999). Bangladesh's courts should be inventive and take environmental action *Suo Motu* (*Dr. Mohiuddin Farooque v. Bangladesh*, W.P. No. 92 of 1996 (unreported)).

9. Weaknesses of Legal Framework and Policies Resulting in Increased Casualties and Extreme Damages

The 2012 Disaster Management Act failed to improve or coordinate disaster management for numerous reasons (MoEFCC, 2012; Sultana, n.d.). The Act encouraged disaster collaboration, justice, and strength. This Act sought to reduce disasters and improve rescue and recovery. It failed to mobilize stakeholders to help the in danger quickly (Ahmed, 2022). Several flaws in the Act make disaster prevention difficult. Poor resources, planning, knowledge, education, unfettered expansion, and social attitudes are to fault. The Act neglected the shortage of money, materials, and labor needed for disaster management, especially after the disaster. It didn't specify accountability and communication, therefore answers were meaningless (Ahmed, Shams, & Hossain, 2021).

Failure to organize risk assessments, evacuations, and resource allocation hampered mitigation (Rahman & Chowdhury, 2021). The Act neglects catastrophic risk education and response, reducing knowledge and resilience (Hasan & Karim, 2020). The Act neglected the reality that unchecked urban expansion, poor infrastructure, and lack of disaster-resistant building methods worsened disasters (Chowdhury & Rahman, 2019; Bangladesh Meteorological Department, 2024). The above issues delayed disaster response, resulting in chaotic and ineffective measures that killed and injured more people (Bangladesh, 2012; Sultana, n.d.). National Plan for Disaster Management (NPDM) 2021–2025 builds on 2010–2015, 2016–2020, and 2019 Standing Orders on Disaster. For this to work in the society, everyone has to participate. Adjusting adaptive policies based on what they learn at many levels and scales may help manage climate change risks (MoEFCC, 2021). The Paris Climate Agreement, SDGs, and SFDRR support NPDM (Rana & Rahman, 2022). NPDM 2021–2025 protects against various dangers, however front-line workers struggle to collaborate, especially during pandemics (Real, 2024). After the COVID-19 pandemic, the plan addresses health risks, humanitarian cooperation, and systemic resilience (Ahmed, 2022; Kamal et al., 2022).

10. Conclusion

Bangladesh's fast growth and climate change have made environmental problems worse, therefore environmental management is necessary. The law has become better, but community involvement, public understanding, and enforcement are still problems. To stop and lessen environmental disasters and reach its development goals, Bangladesh has to enhance its enforcement, community involvement, and legal framework.

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