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DISASTER MITIGATION IN KERALA: A CRITICAL ANALYSIS

Disaster Management Policies and Laws in Kerala: A Critique of Failures and Limitations

Despite the frequent occurrence of natural disasters, Kerala's disaster management policies and laws have shown significant limitations. The increasing severity and frequency of these disasters have exposed the inadequacies of the state's current framework, highlighting the urgent need for comprehensive and updated policies that are both proactive and responsive.

Key components of Kerala's disaster management framework include:

Kerala State Disaster Management Plan (KSDMP)

District Disaster Management Authorities (DDMAs)

Early Warning Systems

Community-Based Disaster Risk Reduction (CBDRR)

Capacity Building and Training

Critique of Failures and Limitations

Despite these measures, Kerala's disaster management policies have been plagued by several failures and limitations, which have been starkly exposed during recent disasters.

1. Inadequate Implementation of Plans and Policies

While the KSDMP is comprehensive on paper, its implementation on the ground has often been lacking. The 2018 floods, which devastated the state, highlighted significant gaps in coordination among various agencies and the failure to effectively implement flood management plans. The lack of regular updates to the disaster management plan to reflect changing risk profiles and the impact of climate change has further compromised its effectiveness.

2. Gaps in Infrastructure and Resource Allocation

Kerala's infrastructure, particularly in rural and hilly areas, remains highly vulnerable to disasters. Despite repeated incidents of landslides, there has been insufficient investment in resilient infrastructure and land-use planning. The lack of proper drainage systems, failure to reinforce dams, and the poor condition of roads and bridges in disaster-prone areas have exacerbated the impact of natural disasters. Resource allocation for disaster preparedness and mitigation is often inadequate, with funds being diverted or delayed, undermining timely responses. For instance, during the 2019 floods, delays in fund disbursement led to prolonged suffering for affected communities.

3. Insufficient Focus on Prevention and Mitigation

Kerala's disaster management policies have traditionally been more reactive than proactive, with a greater focus on response and relief than on prevention and mitigation. The failure to enforce stringent land-use regulations, especially in ecologically sensitive areas, has exacerbated the risk of landslides and floods. Encroachment on riverbanks, deforestation, and unregulated construction in vulnerable areas continue to increase disaster risks. Despite warnings from environmental experts and geologists, the government has not taken sufficient steps to prevent such practices, leading to repeated disasters in the same regions.

Critique of Failures and Limitations

4. Lack of Integration of Climate Change Adaptation

Despite the increasing frequency of extreme weather events, Kerala's disaster management policies have not adequately integrated climate change adaptation strategies. The state's plans do not sufficiently account for the long-term impacts of climate change, such as rising sea levels, changing rainfall patterns, and increased frequency of cyclones. The absence of climate-resilient infrastructure and the failure to incorporate climate change into urban planning and development policies have left Kerala ill-prepared for future disasters.

5.Weak Early Warning Systems and Communication Failures

The effectiveness of Kerala's early warning systems has been called into question, particularly during the 2018 floods and Cyclone Ockhi. The failure to issue timely and accurate warnings, coupled with poor risk communication, resulted in unnecessary loss of life and property. Many vulnerable communities, especially in rural and coastal areas, were not adequately informed about the impending disasters, leaving them with little time to evacuate or take preventive measures. The lack of a coherent communication strategy, especially for marginalized and isolated communities, remains a critical gap in Kerala's disaster management framework.

6.Challenges in Community-Based Disaster Risk Reduction (CBDRR)

While Kerala has made strides in involving local communities in disaster management, the effectiveness of CBDRR initiatives has been uneven. In many cases, community participation is limited to certain areas, leaving other regions without adequate support. Moreover, the involvement of marginalized communities, such as Dalits, Adivasis, and fisherfolk, in disaster preparedness and response efforts has been insufficient. The state's failure to ensure equitable access to disaster resources and support services has exacerbated vulnerabilities among these groups, leading to disproportionate impacts during disasters.

7.Institutional Coordination and Accountability Issues

The fragmented responsibilities among various government departments and agencies have led to inefficiencies and delays in disaster management efforts. Further, there is no sufficient human resource or expertise in the disaster management bodies of the state. The lack of adequate institutional capacity, clear lines of authority and accountability has resulted in poor coordination during disaster response, as seen during the 2018 floods and afterwards. Moreover, the absence of a central body with the authority to enforce compliance with disaster management policies has further weakened the state's preparedness and mitigation efforts.

Overview of Kerala's Disaster Management Framework

Kerala's disaster management framework is governed by the Disaster Management Act of 2005, which provides the legal foundation for disaster preparedness, mitigation, and response in India. It was introduced after the Tsunami in 2004. The Kerala State Disaster Management Authority (KSDMA) was established under this Act as the apex body responsible for formulating policies, coordinating disaster management activities, and ensuring preparedness across the state.

Humanitarian Principles, Humanitarian Charter, and Sphere Standards

The core humanitarian principles are essential guidelines for effective and ethical humanitarian action:

1. Humanity: Human suffering must be addressed wherever it exists. The primary goal of humanitarian action is to protect life, preserve health, and uphold the dignity of all human beings.
2. Neutrality: Humanitarian actors must remain neutral, refraining from taking sides in conflicts or engaging in political, racial, religious, or ideological controversies.
3. Impartiality: Humanitarian efforts must be driven solely by need, prioritizing the most urgent cases without discrimination based on nationality, race, gender, religion, class, or political beliefs.
4. Independence: Humanitarian action must operate independently of political, economic, military, or other external agendas, ensuring that aid is provided based on humanitarian needs alone. The Sphere Standards reinforce this principle by establishing universally accepted benchmarks for humanitarian response, free from external influence, thus maintaining the integrity and focus of humanitarian efforts.

The Humanitarian Charter emphasizes the importance of delivering assistance that respects human dignity. Sphere Standards and other related benchmarks, such as minimum standards for education, should be central to relief and recovery operations. These standards are universally applicable, grounded in scientific evidence, and essential for ensuring effective and ethical humanitarian responses.

A Historical Perspective on Disaster Mitigation in Kerala

1924 Floods: Setting a Precedent

In July and August of 1924, Kerala experienced one of its most devastating floods, which submerged large swathes of the state, particularly in Travancore, Kochi, and Malabar. The continuous rainfall over several days resulted in unprecedented flooding, cutting off entire regions and displacing thousands of families. Although the exact death toll remains undocumented, the scale of destruction highlighted the urgent need for effective flood management and early warning systems, a need that, unfortunately, remains unmet to this day.

A Historical Perspective on Disaster Mitigation in Kerala

1961 Attappadi Landslides: Ignoring Geological Realities

On July 4, 1961, the landslides in Attappadi, Palakkad, claimed 73 lives, laying bare the dangers posed by Kerala's unique topography. This disaster underscored the necessity for land-use planning that accounts for geological vulnerabilities. Despite this early warning, subsequent decades have seen little improvement in managing land stability, with deforestation and unregulated construction continuing unabated in vulnerable regions.

1988 Perumon Train Disaster: Infrastructure in Peril

The Perumon train disaster on July 8, 1988, when the Bangalore-Thiruvananthapuram Island Express plunged into Ashtamudi Lake from the Perumon bridge, killing 105 passengers, is a tragic example of the perils of inadequate infrastructure. This incident emphasized the need for rigorous maintenance and upgrading of infrastructure to withstand Kerala's unpredictable and often extreme weather conditions. However, the lack of such foresight has resulted in repeated failures of critical infrastructure during subsequent disasters.

2004 Tsunami: Coastal Vulnerabilities Exposed

The Indian Ocean tsunami on December 26, 2004, devastated Kerala's coastal communities, resulting in 171 deaths and the displacement of over 400,000 families across six districts. This disaster revealed the critical need for robust coastal zone management, community preparedness, and the integration of modern technologies like tsunami warning systems. Yet, the state's coastal preparedness remains inadequate, as evidenced by the impact of subsequent cyclones and storm surges.

Cyclone Ockhi: A Failure in Coastal Preparedness

Cyclone Ockhi, which struck Kerala's coast in November 2017, left a trail of devastation, officially killing 52 people and leaving over 100 missing, with unofficial estimates from the Latin Church placing the death toll among fishermen at 317. The cyclone exposed significant gaps in coastal preparedness, early warning dissemination, and the protection of vulnerable communities, particularly the fishing population. Despite the availability of advanced forecasting technologies, the state failed to issue timely warnings, leading to avoidable loss of life.

2018 Kerala Floods: A Catastrophe Foretold

The floods of August 2018 were among the most catastrophic in Kerala's history, affecting all 14 districts and claiming 483 lives. Unusually high monsoon rainfall, combined with poor dam management and unplanned urbanization, turned the state into a disaster zone. The failure to implement flood management strategies, despite clear warnings from meteorological agencies, highlighted significant gaps in disaster preparedness and response. A study by the Indian Institute of Technology (IIT) Delhi pointed out that improper dam management exacerbated the flooding, yet no substantial changes have been made since then.

A Historical Perspective on Disaster Mitigation in Kerala

2020 Covid Pandemic Management

Kerala's management of the COVID-19 pandemic initially hailed as exemplary, ultimately revealed significant shortcomings that underscore the state's vulnerabilities under a prolonged crisis. Despite early success in containment through rigorous testing and community-based care, the government's failure to sustain its response during the second wave exposed the fragility of its healthcare infrastructure. Hospitals were overwhelmed, and critical shortages of beds, oxygen, and medicines were met with inadequate preparation and slow response. Frontline workers faced severe burnout, compromising the quality of care and contributing to the state's staggering death toll of over 71,000. Economically, the government's inability to cushion the impact on Kerala's tourism-dependent economy led to widespread job losses and exacerbated unemployment, particularly among returning expatriates. Moreover, the state's welfare measures fell short of addressing deepening social inequalities, as marginalized communities struggled with access to healthcare and education. The digital divide, left unaddressed by the government, widened, leaving many rural students without quality learning opportunities. In sum, while Kerala's government initially garnered praise for its COVID-19 management, its failure to adapt and respond effectively to the evolving crisis highlighted significant governance lapses and the need for more resilient systems to protect its citizens in future emergencies.

Recurrent Landslides: A Persistent Threat

Landslides have repeatedly devastated Kerala, particularly in hilly areas like Wayanad, Idukki, and Malappuram. The Pettimudi landslide in 2020, which claimed 70 lives, is a tragic reminder of the ongoing threat. The Kerala State Disaster Management Authority (KSDMA) has been criticized for not conducting regular hazard assessments, which could have identified high-risk zones and prevented such tragedies. The lack of an integrated approach to land-use planning, deforestation control, and sustainable development continues to put lives at risk.

The Wayanad landslide of 2024

It stands as a grim testament to the state Government's failure in disaster management, exacerbated by negligent governance. The government's disregard for environmental impact assessments and expert advice has been particularly damaging, revealing a pattern of oversight that prioritizes economic gain over ecological balance. The devastating landslide, which resulted in over 400 deaths and left hundreds injured and homeless, underscores the tragic human cost of these failures. Additionally, the disaster's economic impact—damage to infrastructure, loss of agricultural land, and the disruption of local economies—further strains the state's resources. The government's inability to incorporate climate resilience into planning highlights a critical gap in its disaster management approach, leaving regions like Wayanad perilously exposed to future catastrophes.

Human-Made Disasters: The Cost of Negligence

Human-made disasters in Kerala, often stemming from infrastructural failures and regulatory lapses, have further exposed the state's vulnerabilities. The 2016 Puttingal temple fire, which killed 110 people during a fireworks display, and the 2011 Sabarimala stampede, which resulted in 106 deaths, highlight the tragic consequences of neglecting safety protocols in mass gatherings and public events. These incidents underscore the need for stringent enforcement of safety regulations and better preparedness for managing large crowds.

Waste Management

The state government's approach to waste management in Kerala, particularly in response to the Brahmapuram crisis, has been largely reactive and insufficient. While cleanup efforts have been initiated, they often serve as temporary fixes rather than addressing the underlying issues. The government's reliance on waste-to-energy plants, criticized for their unsuitability for mixed waste, highlights a lack of sustainable planning. Additionally, the neglect of critical urban infrastructure, such as the Amayizhanjanthodu canal in Thiruvananthapuram, has led to severe flooding and even fatalities, demonstrating a failure in urban management. The abandonment of Operation Anantha, an initiative that showed promise in tackling urban flooding, further underscores the government's shortsightedness. Overall, these issues point out the need for more integrated and proactive strategies to protect the environment and public health. Without these changes, Kerala's cities will continue to face worsening conditions and eroding public trust.

The Cost of the 2018 Flood

The 2018 floods in Kerala inflicted severe damage, with approximately 500 casualties, 19,000 homes destroyed, and 1.1 million people temporarily displaced. Economic losses were substantial, with the World Bank estimating $3.4 billion in damage and the UN projecting $3.7 billion in recovery costs. The disaster led to a 7.7% reduction in economic activity during July and August, though a post-disaster boom saw a 14.8% increase in economic activity. ATM transactions fell significantly during the disaster months, highlighting the economic disruption.

The cost of maintaining relief camps for 1 million people required about Rs 10 crore daily. With an estimated wage loss of Rs 4,000 crore in August alone, alongside property and infrastructure damages, the economic burden was immense. Infrastructure damage, including 10,000 km of roads and numerous bridges, disrupted economic activities, while the agriculture and tourism sectors faced severe setbacks. The disaster exacerbated Kerala's fiscal challenges, leading to increased borrowing and highlighting the need for long-term resilience strategies.

The Need for Timely and Updated Policy Interventions

To address the numerous gaps in Kerala's disaster management framework, it is imperative to adopt timely and updated policy interventions. The following recommendations are based on a thorough analysis of Kerala's disaster history, current policies, and emerging risks. These recommendations aim to create a more resilient Kerala that can effectively mitigate, respond to, and recover from future disasters.

Key Recommendations

1. Regular Revision and Updating of Disaster Management Plans

Kerala's disaster management plans must be regularly revised and updated to reflect current risks, emerging threats, and the latest scientific knowledge. This includes incorporating lessons learned from recent disasters, as well as integrating climate change adaptation strategies into the plans. The state must ensure that these updates are not merely procedural but are effectively implemented on the ground. The state government should establish a dedicated task force to oversee the continuous revision of disaster management plans and ensure their alignment with national and international best practices.

2. Investment in Resilient Infrastructure and Risk Reduction Measures

A significant investment is needed in resilient infrastructure, particularly in flood-prone and landslide-prone areas. This includes the construction of flood defences, landslide barriers, and the reinforcement of critical infrastructure such as dams, bridges, and roads. Additionally, the state must prioritize the development of sustainable urban planning practices that reduce disaster risks, such as enforcing strict building codes, promoting green infrastructure, and enhancing natural floodplain management. The allocation of resources for disaster risk reduction must be transparent, with clear accountability mechanisms to prevent misuse and ensure timely execution. Similar strategy must be adopted in pandemic risk reduction and mitigation.

3. Integration of Climate Change Adaptation into Disaster Management

Kerala's disaster management policies must be integrated with climate change adaptation strategies to address the long-term impacts of climate change. This includes updating land-use planning, infrastructure development, and agricultural practices to reflect the changing climate. The state should also invest in climate-resilient infrastructure, such as sea walls, stormwater management systems, and drought-resistant crops. Furthermore, the state government must engage in active dialogue with scientific institutions, climate experts, and local communities to develop a comprehensive climate adaptation plan that is both practical and inclusive.

4. Enhancement of Early Warning Systems and Communication Strategies

Kerala must strengthen its early warning systems to ensure that timely and accurate information is disseminated to all vulnerable communities. This includes investing in advanced real-time monitoring systems for floods, landslides, and cyclones, as well as improving the state's meteorological capabilities. The state should also develop a robust communication strategy that ensures risk information reaches marginalized and remote communities, using multiple channels such as local media, community radio, mobile alerts, and social media. Additionally, the state must conduct regular public awareness campaigns and drills to ensure that communities are well-prepared to respond to early warnings.

The Need for Timely and Updated Policy Interventions

5. Expansion and Strengthening of Community-Based Disaster Risk Reduction

To ensure that disaster preparedness and response efforts are inclusive and effective, Kerala must expand and strengthen its CBDRR initiatives. This includes involving marginalized and vulnerable communities in all stages of disaster management, from planning to response and recovery. The state should provide training and resources to local communities, enabling them to develop their own disaster preparedness plans and participate in risk reduction activities. Furthermore, the state government must ensure that disaster resources and support services are distributed equitably, with a focus on reaching the most vulnerable populations.

6.Institutional Coordination and Establishment of a Central Disaster Management Authority

To address the issues of fragmentation and inefficiency, Kerala must establish a central disaster management authority with the power to enforce compliance with disaster management policies across all levels of government. This authority should have clear lines of responsibility and accountability, ensuring that all departments and agencies work together seamlessly during disaster response. The state must also develop a comprehensive disaster response framework that clearly outlines the roles and responsibilities of each agency, with a focus on improving coordination, communication, and resource allocation. The state government should also consider decentralizing disaster management to the district and local levels, empowering local authorities to take proactive measures in disaster preparedness and response.

7. Transparent Management of Disaster Resources and Fund Utilization

Transparency and accountability in the management of disaster resources and funds are crucial for ensuring effective disaster response and recovery. The state must establish a transparent mechanism for the allocation and utilization of disaster relief funds, with regular audits and public reporting to ensure that resources are used efficiently and reach those in need. The state government should also implement a system for tracking and monitoring the distribution of relief materials, compensation, and rehabilitation efforts, with a focus on addressing the needs of marginalized and vulnerable communities.

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Facts and Figures

The following facts and figures provide a quantitative overview of the impact of disasters in Kerala, highlighting the scale of the challenges faced by the state and the need for comprehensive disaster management policies.

2018 and 2019 Floods: The 2018 floods affected over 5.4 million people across all 14 districts, with 483 deaths and economic losses estimated at ` 31,000 crore (approximately $4.3 billion). The 2019 floods displaced over 1.5 million people, with 121 deaths and extensive damage to infrastructure and agriculture.

Landslides: Between 2018 and 2021, Kerala experienced over 250 landslides, with the Pettimudi landslide in 2020 being one of the deadliest, claiming 70 lives. The economic losses from landslides are estimated to be in the hundreds of crores annually.

Cyclone Ockhi: Cyclone Ockhi in 2017 caused significant damage along Kerala's coast, with official estimates placing the death toll at 52 and over 100 people missing. Unofficial estimates from the Latin Church suggest the death toll among fishermen was as high as 317.

Covid Pandemic: As per the official Kerala Government COVID-19 Dashboard, which was last updated on 09/09/2022, the total reported COVID-19 cases in the state is 6,767,946, and the death toll stands at 71,123.

Climate Change Impact: According to the Intergovernmental Panel on Climate Change (IPCC), Kerala is among the most vulnerable states in India to climate change impacts, including rising sea levels, increased frequency of extreme weather events, and changes in rainfall patterns. However, Kerala's disaster management plans lack comprehensive strategies for addressing these challenges.

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