

# A Case Study on Chooralmala - Mundakai Landslide

in Wayanad District, Kerala

## Response and Beyond



*Submitted by*

*Submitted to*



**Centre for Disaster Management (CDM)**  
Lal Bahadur Shastri National Academy of Administration  
Mussoorie, Uttarakhand -248179

**National Disaster Management Authority (NDMA)**  
Government of India, New Delhi - 110029

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Wayanad District, Kerala**

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***Prepared by***

**Misal Sagar Bharat, IAS**

Sub Collector & Sub Divisional Magistrate,

Mananthavady, Wayanad

Sub Collector's Office, Mananthavady- 670645

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Email: [greatwaypapers@gmail.com](mailto:greatwaypapers@gmail.com)*

## Acknowledgements

I sincerely extend my heartfelt gratitude to Mrs. Meghashree D R IAS, the District Collector of Wayanad, for her invaluable guidance and expertise in shaping this document. Her leadership and unwavering dedication have played a pivotal role in coordinating disaster response efforts. I also wish to acknowledge the contributions of numerous officials, volunteers, and organizations whose relentless commitment and collaborative efforts have been instrumental in managing the crisis. Their selfless service and dedication stand as a beacon of hope, demonstrating the power of unity in times of adversity.

Furthermore, I pay my deepest respects to the disaster victims and their families, whose resilience and courage in the face of such profound tragedy continue to inspire us all. This article is dedicated to their unwavering determination to rebuild their lives despite unimaginable hardships. Their stories of survival and perseverance highlight the strength of the human spirit and emphasize the importance of collective compassion in the recovery process. Efforts are underway to ensure long-term rehabilitation for the affected individuals, focusing on permanent housing, sustainable livelihoods, education, and healthcare. Under the District Collector's supervision, continuous monitoring and evaluation ensure effective implementation of these initiatives. Additionally, plans are in motion for the construction of two new townships, restoration of damaged infrastructure, and ecological rejuvenation, paving the way for a stronger, more resilient future for the region.

**Misal Sagar Bharat, IAS**

Sub Collector & Sub Divisional Magistrate,  
Mananthavady, Wayanad

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0.98 km<sup>2</sup> in the Meppadi Grama Panchayat, Vellarimala Revenue Village, Vythiri Taluk, impacting Wards 10, 11, and 12, including the settlements of Punchirimattam, Mundakkai, Chooralmala, and Attamala.

**Impact of the Landslide:** The Wayanad landslides resulted in devastating human, environmental, and economic losses. It is described as one of Kerala's deadliest disasters.

***Human Impact:*** The disaster caused 298 fatalities, 631 hospitalizations (including 37 seriously injured), and 32 missing persons. Seventeen families were completely lost. Over 3,000 individuals were displaced, with 2,581 seeking shelter in 17 relief camps and others staying with relatives. This displacement severely disrupted livelihoods and access to basic amenities, compounded by the emotional trauma of loss.

***Environmental Impact:*** 80 hectares of forest were severely damaged, with extensive destruction in areas like Mundakkai, Nilambur Kovilakam, and Baderi. This loss of forest cover and disruption of wildlife habitats significantly impacted biodiversity. The diversion of the Iruvazhinji Puzha River caused flash floods and contaminated water bodies. The landscape was drastically altered, hindering natural recovery.

***Economic Impact:*** The estimated economic loss was ₹1,202 crore. 1,685 buildings, including homes and infrastructure, were damaged, severely disrupting transportation and communication networks. The agricultural sector suffered significant losses with 110 hectares of land destroyed, impacting farmers' incomes. Overall economic activity was severely disrupted.

**Response, Search and Rescue:** An immediate evacuation and rescue operation commenced in the early hours. Local volunteers, along with trained Aapda Mitra, Civil Defense volunteers, and government agencies (police, fire & rescue, local self-government, revenue officials), reached the affected areas around 2:00 AM. The District Collector and District Police Chief arrived around 2:30 AM. The NDRF unit, already stationed for flood activities, was immediately deployed. Due to the massive scale, a coordinated approach across all departments was necessary, and staff on leave were recalled.

**Command and Coordination:** To oversee the response, the Chief Minister established a Cabinet subcommittee on August 1, 2024, comprising four ministers, stationed in Wayanad to supervise operations and conduct daily reviews. The Kerala State Level Crisis Management

Committee (SLCMC), led by the Chief Secretary, was formed to direct relief operations, coordinating resource allocation and reviewing progress daily. Special Officers were appointed: the Inspector General of Police as Onsite Incident Commander reporting to the Chief Secretary, and a senior IAS officer and two additional IAS officers were appointed to oversee and assist the district administration in relief efforts. The District Collector appointed Nodal officers for various District Level Emergency Response Teams through Order No. DCWYD/2864/2024-DM3 Dated 01/08/2024. These teams had specific duties covering Search and Rescue Coordination, Camp Management, Health Management, Dead Body and Burial Management, Volunteer Management, Data Management, Relief Materials Storage and Distribution, Waste Management, Social Media Management, Sponsorship Management, and Resource Mobilization. This structure was crucial for a targeted and efficient response.

**Mobilization of Resources:** The response involved a massive mobilization of specialized resources. Eighty-three excavators were used for clearing debris and creating access. Indian Air Force helicopters provided airlift support for personnel, relief supplies, and a cadaver dog. Drones were extensively used for search, visualization, and supply delivery, including specialized "DIBODS" drones for detecting buried objects/survivors. Xaver and Reeco radars were airlifted from Delhi for deep search capabilities. Over 150 freezers stored recovered remains. Over 200 ambulances transported the injured. Transport vehicles, water tankers, and fire vehicles were also mobilized. The District Emergency Operation Centre's inventory facilitated a quick response.

**Search and Rescue Operations:** Heavy rains and the destruction of the bridge to Mundakai initially hampered efforts. The Indian Army and MEG rapidly constructed a 190-foot Bailey bridge in 16 hours for vehicle access and a parallel 100-foot footbridge, which were critical for establishing access and transporting resources. Search and rescue teams were dispatched from various agencies, including Fire & Rescue, Aapda Mitra, NDRF, Army, Coast Guard, Civil Defense, Police, Navy, and Civil Society Organizations, totaling over 2,000 personnel, with over 1,000 from Civil Society Organizations alone. The affected area was divided into six zones (Punchirimattom town, Mundakkai town, School Area, Chooralmala, Village Area, and Downstream) for a targeted approach. Each zone had dedicated teams. Remote sensing (satellite imagery, drones) and local knowledge were used for initial assessments. Satellite imagery provided critical information on the landslide's extent, high-risk zones, and damage assessment. Canine units from multiple police/army departments played a critical role in

locating survivors and victims. The active involvement of local communities and volunteers was crucial, providing local knowledge and assisting in search, debris removal, and support.

**Dead Body and Body Parts Management:** The disaster resulted in 454 recovered remains (231 bodies, 223 body parts) across Wayanad and Nilambur. Remains recovered from the landslide site were processed at Meppadi Police station and CHC Meppadi, while those from Nilambur were processed locally before being transferred to Wayanad in freezers. CHC Meppadi served as the primary mortuary, supplemented by temporary facilities at other locations as capacity was reached. Remains were stored in freezers under medical supervision with revenue officials maintaining registers. 179 remains were released to relatives based on physical identification. DNA samples were collected from identified victims and immediate blood relatives of missing persons for further investigation and matching.

**Mass Burial:** Due to unclaimed remains, a burial ground was identified and approved in Meppadi Panchayat under Section 34(g) of the Disaster Management Act, 2005, to prevent public health concerns. 0.2611 hectares of land in Vellarimala Village was designated for this purpose. 8 unidentified bodies were buried on August 4, 2024, and 29 unidentified bodies and 154 body parts were buried on August 5, 2024, following all-religious prayers.

**Missing Person List and DNA Matching:** A data-driven Standard Operating Procedure was developed to generate a list of missing persons, using ration card data linked with information from various sources (DEOC calls, identified bodies, hospitalized, camps, workers, tourists). Local consultation and police verification refined the list. An initial draft list of 131 missing persons was published in 6 days. DNA matching procedure with samples from relatives and unidentified remains resulted in 99 matches. For the remaining 32 unmatched persons, the government initiated the process for death registration and financial aid distribution.

**Shelter and Relief Camp Management:** The government, with volunteer/organization support, organized 17 camps in schools, community centers, and secure buildings to shelter up to 2,581 displaced individuals. Camps provided essential services: shelter, food via community kitchens, clean water, medical care, psychosocial support from counselors, sanitation, and security. A database of occupants was maintained. The "Kuttiyidam" program was launched in 15 camps by the District Child Protection Unit, creating dedicated children's spaces for play and creative activities to address psychological trauma. The program attracted an average of

265 children daily and provided art-based relaxation programs, with professionals trained in art therapy techniques.

**Health Care Management:** A swift and comprehensive medical response was mobilized. Emergency medical arrangements, including a dedicated ward and rapid response team, were established at Meppadi Social Health Center. A 24-hour control room was set up. Police inquests and post-mortems were conducted, expedited by doctors from outside the district. Bodies were managed through mortuaries and temporary facilities. Treatment for the injured was provided. Temporary hospitals, medical personnel in camps, medicine distribution, and epidemic surveillance were implemented. Medical aid centers and "doxy corners" were set up for disease prevention. A temporary morgue was established with a cooling system.

**Psycho Social Support and Counselling:** Psychosocial support was critical, with mental health professionals providing emotional and psychological first aid, individual/group counseling, and community support in camps and medical centers. The State and District Mental Health Programmes mobilized ~150 counselors and psychiatrists, conducting over 2,000 individual and 401 group counseling sessions. A 24/7 toll-free helpline was established. Help desks in all 17 camps were staffed by 121 counselors providing round-the-clock assistance, resulting in over 7,510 counseling sessions and numerous other interventions. Vulnerable populations, including differently-abled individuals and isolated elderly, received particular attention and rehabilitation plans were being developed.

**Relief Material Management:** A multi-phase strategy was implemented, with Kalpetta St. Joseph's Convent School becoming the primary collection and distribution center after the initial hub's capacity was exceeded. A Fair code team managed real-time inventory using specialized software. Over 250 volunteers supported logistics. Standardized relief kits were assembled (over 6,000 prepared, 3,300 distributed). A secondary storage facility was secured. Centralized collection, real-time inventory, extensive volunteer support, and flexible storage ensured efficient distribution.

**Volunteer Management:** The strategy was multi-pronged, including spontaneous local response, relief camp establishment with initial teams, and the formation of a volunteer management committee to coordinate the influx. A registration drive resulted in 22,000 registrations within 24 hours. The Wayanad Inter-Agency Group played a key coordinating role. Volunteers were strategically deployed to camps and collection centers, with contributions

from organized groups and individuals. Volunteers were essential in all aspects of the response, maximizing impact.

**Social Media and Media Management:** A comprehensive strategy led by the Public Relations Department focused on timely and accurate information dissemination. This included prompt reporting, coordination with authorities, highlighting human-interest stories, leveraging social media, and post-disaster awareness campaigns. The District Collector effectively used social media for vital updates. This proactive approach kept the public informed, coordinated efforts, and countered misinformation.

**Data Management:** Proper data collection and management were essential for camp management, planning assistance, and distributing financial support. A dedicated team conducted a Rapid Need Assessment (RNA) survey in the camps, collecting detailed information via Google forms into a spreadsheet tracker, creating a centralized database of affected families. This database facilitated the distribution of immediate financial assistance (₹10,000 to 1,031 families, ₹300/day to 2,188 adults), planning temporary rehabilitation, distributing Back to Home Kits, and capturing specific needs. An ERP solution was engaged for camp inventory/stock management, improving efficiency and timely distribution. The experience highlighted the need for a robust, government-owned digital solution for future disasters.

**Waste Management:** A comprehensive plan involved collaboration between Suchitwa Mission, Harita Karma Sena, Clean Kerala Company, and volunteers. Organic waste was collected and sent for composting or use as animal feed. Clean-up drives collected non-organic and unusable cloth waste. Sanitary waste was disposed of using incinerators. Reusable tableware was used to reduce disposable waste. Septic tank desludging units treated waste. These coordinated efforts created a cleaner, healthier environment.

**Temporary Rehabilitation and Recovery:** Temporary accommodation was urgently needed as families were housed in schools, causing academic disruption. The government facilitated rent assistance of ₹6,000 per month for affected families via G.O.(Rt) No.597/2024/DMD dated 13.08.2024. Gram Panchayats, with committees and the DM Cell, arranged rental homes and apartments in nearby areas. Panchayat teams visited houses, compiled lists, and families chose their temporary homes. Currently, 765 families are in rented houses, with rent paid by the government. Additionally, government quarters were repaired and allotted, housing 69

families. This strategy successfully provided shelter, allowing the dissolution of all 17 relief camps by August 21, 2024, as everyone was shifted to rented or government housing.

**Back to Home Kits:** As families moved, basic household materials were needed. District administration appealed for donations, resulting in the collection of around 867 "Back to Home Kits" containing essential furniture, kitchenware, and supplies. These kits were coordinated and delivered to families, providing basic materials to restart their lives.

**Financial Assistance:** The government provided various forms of financial assistance via G.O.(Rt)No.589/2024/DMD dated 09.08.2024.

**Immediate Financial Assistance:** ₹10,000 was given to each of the 1,031 eligible families to address urgent needs.

**Livelihood Support:** ₹300 daily for 30 days was provided to two adults per affected family (1225 families), initially for 3 months and extended for a further 6 months.

**Ex-gratia Payments:** ₹8,00,000 per deceased individual's family (₹4 lakh from SDRF, ₹2 lakh CMDRF, ₹2 lakh NDRF) was provided, including for 184 deceased persons on war footing.

**Burial Assistance:** ₹10,000 was provided for each deceased individual's family to cover funeral costs.

**Assistance for Seriously Injured:** ₹50,000 from CMDRF plus varying SDRF amounts based on hospitalization duration (₹16,000 for >1 week, ₹5,400 for <1 week) was provided to injured persons.

**Reopening of Schools:** The landslide damaged two local schools and displaced students, while 17 others were used as relief camps. A comprehensive strategy involved relocating students to alternative spaces (546 GVHSS students to GHSS Meppadi, 61 GLPS students to APJ Hall). Essential resources like replacement textbooks and free uniforms were provided. Community and government collaboration ensured facilities like bio-toilets and transportation support (KSRTC providing passes and services). As camps dissolved, the 17 schools used for relief were cleaned and reopened on September 2. Classes at GLPS Mundakkai and GVHSS Vellarimala also recommenced on September 2, demonstrating the strategy's effectiveness in minimizing educational disruption.

**Grievance Redressal:** A special cell was established at the District Emergency Operations Center (DEOC) to collect, sort, and process requests/complaints/demands from landslide victims, cross-verified with village officers. Nearly 2000 requests have been processed and forwarded to relevant departments, with the District Collector conducting weekly reviews to ensure prompt resolution.

**Micro Plan Preparation:** Steps were taken for long-term rehabilitation by developing a family-oriented Micro Plan. Based on baseline data from the RNA survey, the plan identifies the immediate, intermediate, and long-term requirements of each family to help them return to normalcy. It studies family needs based on existing information, gathers missing data through discussions/interviews, maps needs to existing schemes, and recommends new initiatives. Kudumbashree conducted the initial baseline study. Families were grouped, and facilitators conducted discussions to finalize draft plans, dividing interventions into short, medium, and long-term. A software and dashboard were prepared for monitoring and implementation by respective departments. The plan was approved by the Meppadi Panchayath governing body and submitted to the District Planning Committee. A District Level Monitoring Committee, chaired by the District Collector, was formed to coordinate and monitor implementation.

**Conclusion and Way Forward:** The response to the Chooralmala-Mundakkai landslide disaster was among the most swift, comprehensive, and well-coordinated efforts in the district's history. The scale of devastation required quick and strategic decision-making. The effects extended beyond human casualties, impacting the environment, ecology, and livelihoods. The district administration, supported by the Indian Army, volunteers, and various agencies, mobilized all available resources. While the initial rescue phase lasted over a month, sustained efforts continue to provide long-term support. To aid rehabilitation, authorities are working towards providing permanent housing, sustainable income opportunities, and access to education and healthcare. The District Collector closely monitors these efforts. Plans are also underway to develop two new townships, rebuild critical infrastructure, and restore the damaged environment. These initiatives aim not only to recover from the immediate disaster but also to build a more resilient and sustainable future for the affected communities.

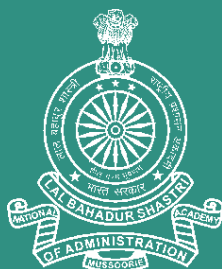
## 4. Conclusion and Way Forward

The Chooralmala-Mundakai landslide necessitated the immediate provision of rescue and recovery operations following the Chooralmala-Mundakkai landslide disaster were among the most swift, comprehensive, and well-coordinated efforts in the district's history. The scale of devastation demanded quick and strategic decision-making, executed through multiple channels, making it an unprecedented crisis management effort. The landslide's effects extended beyond human casualties, impacting the environment, local ecology, and the livelihoods of the affected communities. The district administration, with support from the Indian Army, volunteers, and various government agencies, mobilized all available resources—including skilled personnel, advanced machinery, and community support—to carry out rescue missions. Though the initial rescue phase lasted over a month, sustained efforts continue to ensure long-term support for survivors.

To aid rehabilitation, authorities are working towards providing permanent housing, sustainable income opportunities, and access to essential services such as education and healthcare. The District Collector closely monitors the implementation of these efforts, ensuring their effectiveness. Additionally, plans are underway to develop two new townships, rebuild critical infrastructure, and restore the damaged environment. These initiatives aim to not only recover from the immediate disaster but also build a more resilient and sustainable future for the affected communities.

## Centre for Disaster Management

Centre for Disaster Management (CDM) is a research and training centre of Lal Bahadur Shastri National Academy of Administration (LBSNAA), Mussoorie, Department of Personnel & Training (DoPT), Government of India. The Centre is involved in training officers belonging to the IAS and other Group-A civil services at induction as well as at Mid-Career level in various aspects of disaster management through classroom sessions, case studies, and experience sharing presentations, panel discussions, workshops, and mock drills. Apart from conducting training programmes on fire safety, search and rescue, IRS, DRR, DDMP, school safety, the centre is involved in various types of documentation and publication activities in terms of case studies, documentation of best practices, research papers, books and posters in national and international journals and developed course specific training materials in the area of Disaster and Emergency management and Science and Technology.



## Centre for Disaster Management (CDM)

Lal Bahadur Shastri National Academy of Administration (LBSNAA),

Mussoorie - 248179, Uttarakhand

EPABX: 0135-2222000 (Extn-2385)

Telephone: 0135-2632655; Fax: 0135-2632350, 2632720

Email: [cdm.lbsnaa@nic.in](mailto:cdm.lbsnaa@nic.in)