

Disaster Risk Management Financing in India Review

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Abbreviations

A

AAL	Annual Average Loss
AFD	Agence Française de Développement
AIIB	Asian Infrastructure Investment Bank

B

BPL	Below Poverty Line
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C

CRF	Calamity Relief Fund
CAG	Comptroller and Auditor General
CAT DDO	Catastrophe Deferred Drawdown Option
CWRDM	Centre for Water Resources Development and Management
CSIR-NEIST	Council for Scientific and Industrial Research - North East Institute of Science and Technology
CSR	Corporate Social Responsibility

D

DRM	Disaster Risk Management
DRI	Disaster Risk Index
DREF	Disaster Response Emergency Fund
DRFI	Disaster Risk Financing and Insurance
DRF	Disaster Ready Fund
DRR	Disaster Risk Reduction
DDMA	District Disaster Management Authority
DMMC	Disaster Mitigation & Management Centre
DWRS	Disaster Warning and Response System
DCs	District Collectors
DPR	Detailed Project Report

E

EQC	Earthquake Commission
ERDP	European Regional Development Fund
EAFRD	European Agricultural Fund for Rural Development
EU	European Union
ERP	Enterprise Resource Planning

F

FC	Finance Commission
FFC	Fifteenth Finance Commission
FONDEN	Fondo de Desastres Naturales
FLCN	Fund for the Fight against Natural Catastrophes
FSEC	Fonds de solidarité contre les événements catastrophiques
FY	Financial Year

G

GDP	Gross Domestic Product
GIS	Geographic Information System
GLOF	Glacial Lake Outburst Flood
GPDM	Gram Panchayat Disaster Management Plan
GSDMA	Gujarat State Disaster Management Authority

H	
HP	Himachal Pradesh
HLC	High-Level Committee
HDI	Human Development Index
I	
INR	Indian Rupee
IFIs	International Financial Institutions
IBRD	International Bank for Reconstruction and Development
IMCT	Inter Ministerial Central Team
IMD	Indian Meteorological Department
ISRO	Indian Space Research Organisation
K	
KSDMA	Kerala State Disaster Management Authority
KfW	Kreditanstalt für Wiederaufbau
L	
LDRRMF	Local Disaster Risk Reduction and Management Fund
LGUs	Local Government Units
M	
MSD	Ministry of Social Development
MnhPRA	Morocco Natural Hazards Probabilistic Risk Assessment
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
M&E	Monitoring & Evaluation
MP	Madhya Pradesh
MHA	Ministry of Home Affairs
MIS	Management Information System
MoHUA	Ministry of Housing and Urban Affairs
MoRTH	Ministry of Road Transport and Highways
MoU	Memorandum of Understanding
N	
NCCF	National Calamity Contingency Fund
NDMF	National Disaster Mitigation Fund
NDMA	National Disaster Management Authority
NDRF	National Disaster Response Fund
NDRMF	National Disaster Risk Management Fund
NDRRMF	National Disaster Risk Reduction and Management Fund
NEMA	National Emergency Management Agency
NE	North-Eastern
NEH	North-Eastern and Himalayan
NESAC	North Eastern Space Applications Centre
NDMIS	National Disaster Management Information System
NEC	Northeastern Council
O	
OSDMA	Odisha State Disaster Management Authority
P	
PDNA	Post Disaster Needs Assessment
PCDIP	Philippine City Disaster Insurance Pool
PFB	Pooling Fund Bencana

PML	Probable Maximum Loss
PPP	Public-Private Partnership
P&CB	Preparedness & Capacity-Building
PIB	Press Information Bureau
PWD	Public World Department

Q

Q1	Quarter 1
Q2	Quarter 2

R

RBA	Rashtriya Barh Ayog
RIKA	Resilience Innovation Knowledge Academy
RKDP	Rebuild Kerala Development Program
RKI	Rebuild Kerala Initiative
RKP	Resilient Kerala Program

S

SDRF	State Disaster Response Fund
SDMF	State Disaster Mitigation Fund
SDRMF	State Disaster Risk Management Fund
SFC	Sixteenth Finance Commission
SDMA	State Disaster Management Authority
SDMP	State Disaster Management Plan
SEC	State Executive Committee
SRC	State Relief Commissioner
SMS	Short Message Service
SOPs	Standard Operating Procedures
SOR	Schedule of Rates
SC-NEC	Sub-Committee of the National Executive Committee

T

TCIP	Turkish Catastrophic Insurance Pool
TOR	Terms of Reference

U

USDMA	Uttarakhand State Disaster Management Authority
USA	United States of America
UNDP	United Nations Development Program
UNDRR	United Nations Office for Disaster Risk Reduction

V

VBSR	Vallabh Bhawan Situation Room
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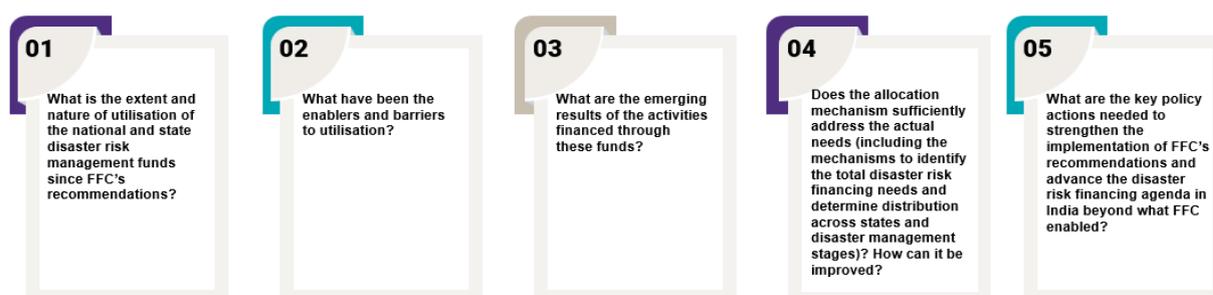
Executive Summary

In a country as geographically and climatically diverse as India, disaster risk management (DRM) financing plays a pivotal role in safeguarding communities, infrastructure, and economic stability.

India's DRM financing is embedded within a broader institutional and legal framework anchored by the Disaster Management Act 2005, which established the National Disaster Management Authority (NDMA). The Fifteenth Finance Commission (FFC) introduced crucial reforms that significantly expanded the scope and scale of DRM financing through the creation of the National Disaster Risk Management Fund (NDRMF) and the State Disaster Risk Management Funds (SDRMF).

This Report on DRM Financing in India Review seeks to inform and enrich the deliberations of the Sixteenth Finance Commission (SFC) by presenting a detailed analysis of the implementation of FFC recommendations and allocations related to DRM.

The broad areas of inquiry which guided this analytical study to inform the SFC's recommendations are depicted below.



To achieve the objectives of the study, a consultative and participatory approach was adopted, ensuring engagement with key stakeholders throughout the process.

In addition to the pan-India analysis, a representative sample of 7 States – Assam, Gujarat, Kerala, Madhya Pradesh, Meghalaya, Odisha, and Uttarakhand – was chosen for deep dive analysis across the different review components.

The findings from the review of the State Disaster Response Fund (SDRF), National Disaster Response Fund (NDRF), State Disaster Mitigation Fund (SDMF), and National Disaster Mitigation Fund (NDMF) provided insights into the implementation processes, extent and nature of utilization, institutional mechanisms complementing capacities, enablers and barriers, as well as their impact on disaster risk mitigation, preparedness, response, and recovery efforts.

- **State Disaster Response Fund (SDRF)** - Out of the total SDRF allocation of INR 70860.20 crores for 2021-24, an amount of INR 56,565.24 crores (79.8%) has been utilized.
 - SDRF spending was driven by the actual incidence of disasters. The expenditures under SDRF were mostly on traditional relief and response efforts, largely humanitarian relief and short-term restoration.

- Central releases of SDRF have been mostly timely and in full amounts.
- The technical and institutional capacities of States play a key role in determining the 'effectiveness' and 'efficiency' of relief measures.
- **National Disaster Response Fund (NDRF)** - Overall, the NDRF has been substantially drawn down for major disasters in this period, including cyclones, floods, and extreme rainfall events. A total of INR 13,424.95 crores of NDRF has been released during FY 22- FY 25, with Karnataka being the State which has availed ~40% of the total NDRF released during this period.
 - NDRF utilization is driven by the occurrence of extreme disaster events of large magnitude; utilization levels are higher during those years with higher frequency and severity of disasters.
 - NDRF spending has been on relief and immediate rehabilitation.
 - Like the SDRF, the NDRF implementation has also benefited from strong technical and institutional capacities of States, online portal and tracking systems, and the mainstreaming of disaster risk considerations into development projects.
 - NDRF has been relevant in providing timely relief to victims and rehabilitation support for quick recovery. Its impact is also seen in economic cushioning. This creates a positive economic impact on resilience.
- **State Disaster Mitigation Fund (SDMF)** - In the FFC period, the total SDMF allocation amounts to INR 32031.00 crores, of which around 23.8% of funds have been utilized, as on 31st March 2024.
 - SDMF's utilization has been uneven and generally low in the initial years, with a few notable exceptions. Most states set up SDMF accounts in 2021 or in early 2022 after MHA issued guidelines in January 2022.
 - There are instances of States having integrated SDMF with development planning; Madhya Pradesh and Kerala are examples. Some States have created dedicated cells or Nodal Officers in each Department for disaster mitigation to generate proposals and oversee implementation.
 - Institutional partnerships and collaborations are helping to augment the technical capacities required for the implementation of mitigation interventions under SDMF.
- **National Disaster Mitigation Fund (NDMF)** - In the early years of 2021-24, the utilization of NDMF was minimal as it was new, and the frameworks were being set, and projects identified. By 2024-25, the pace picked up, and a number of major mitigation projects received approval under NDMF. As of 31st March 2025, only 12.09% of the total NDMF allocation of INR 5950.00 crores has been released.

The findings and analysis on the implementation of SDRF, NDRF, SDMF, and NDMF, along with an overview of experiences of select States, are detailed in 'Chapter 2: Implementation of DRM Funds recommended by the Fifteenth Finance Commission' of this report.

The FFC introduced the Disaster Risk Index (DRI) - based model for allocating funds to State Governments. The insights from the review of the DRI-based fund allocation model indicate that the model has generally succeeded in its early years at making funding fairer and more needs-oriented.

Overall, the distribution of funds under the DRI-based formula appears statistically coherent; larger States get more in absolute terms, but riskier States get proportionally more than they would have under previous models. The DRI-based model of fund allocation facilitates more resources per person to those in States where each person is at higher risk or has lesser capabilities to cope with a disaster event. States facing greater hazard exposure show correspondingly higher allocations. The hazard scoring in DRI is static and derived from historical data and past occurrences. However, the frequency and intensity of many hazards are shifting due to climate change and environmental factors. A static index in a dynamic climate cannot accurately estimate risk. However, the nature of losses from extreme weather events and the unprecedented needs even from states with previously moderate impacts indicates that the benefits of the index itself in enabling the full scale of funding needs may become marginal over time, unless the pool itself grows to cover the needs and is adaptably managed to direct resources where needed. Nevertheless, improvements in the indexing methodology are certainly possible and desirable in service of enhanced equity and alignment with state experiences of risk. Further, the index's potential as a signalling mechanism to track and incentivize risk reduction may be leveraged further and its effectiveness improved by enabling utilisation.

The analysis of State vulnerabilities vis-à-vis fund distribution is presented in 'Chapter 3: Examining the Principles of Distribution of Disaster Management Funds' of this report.

When India's approach to disaster fund distribution is assessed in the global context of disaster risk financing, its model of pre-allocated, risk-indexed grants to sub-national governments is innovative and stands out internationally.

India's model pre-positions funds at State level, as a ready-to-use pool of funds for immediate use when a disaster strikes. India might be the first large federal country to systematically use a disaster risk score in fiscal allocation. It reflects a shift from purely reactive funding to anticipatory, science-based financing, which is a hallmark of best practice in disaster risk reduction. It has earmarked allocations for mitigation towards enhancing State preparedness and reducing disaster impact and subsequent relief. Therefore, India's model is aligned with global best practices, Sendai Framework, and international risk financing principles.

The benchmarking of India's DRM Financing model against international best practices is explained within 'Chapter 3: Examining the Principles of Distribution of Disaster Management Funds' of this report.

The review findings suggest that the SFC and policymakers could build on the FFC's work by retaining the DRI-based allocation methodology while refining the risk index, strengthening institutional capacities, and integrating prevention. The recommendations in this direction are summarized below.

- **Developing a performance-based and readiness-based allocation model for SDMF, while continuing the DRI-based allocation for SDRF:** It would be more appropriate to

continue the DRI-based allocation for SDRF but re-examine its strict application to SDMF. For SDMF, a hybrid allocation model could be considered – (i) Base allocation to all states (to build basic mitigation capacities), (ii) A variable allocation based on DRI, and (iii) Possible performance-linked incentives for effective mitigation planning, fund utilization, and innovation.

- **Modify the DRI to better reflect the historical disaster profile and emerging climate-induced risks:** Proposed modifications include (i) Enriching the Vulnerability Metric, (ii) Incorporating Additional Hazards or Proxies for “Other Hazards”, and (iii) Integrate Climate Change Projections.
- **Strengthening the NDMIS to ensure accuracy and transparency, and mandating updation for approvals and fund releases** to reflect updated State-wise allocations, releases, utilization percentage, and project status. The NDMIS should have live dashboards of all SDRF/SDMF receipts and expenditures of all States. If the NDMA mandates that updated status on the NDMIS is a mandatory prerequisite for Central approvals and release of funds, the States would be motivated to ensure regular and updated data entry on the NDMIS.
- **Facilitate Integration of Disaster Management Funds with Development Programs:** It is recommended that each State map SDRF/SDMF expenditures against the State Disaster Management Plan (SDMP) and sectoral development plans. The Finance Commission grants could be considered as seed money to disaster-proof infrastructure under larger schemes like MGNREGA, Smart Cities, Jal Jeevan Mission, etc.
- **Strengthen Project Pipeline and Technical Support for Mitigation Funds:** It is critical to build technical capacities at State and District levels to identify and design mitigation projects. The NDMA and Central agencies could consider expanding initiatives to help States develop DPRs for SDMF and NDMF. This could include creating a roster of accredited experts (Engineers, Hydrologists, etc.) to support States, and funding feasibility studies from SDMF so that a robust pipeline of bankable projects is ready.
- **Provide higher allocation for ‘Localized Disasters’:** Due to the vast and diverse nature of disaster events, 10% of the allocation may not be sufficient to address relief efforts across all States for ‘local disasters’ which are outside the notified disasters. Hence, flexibility for higher allocation may be provided to the States based on certain conditions to be fulfilled.
- **Improve Coordination Between Relief and Mitigation Efforts:** States should institute a mechanism where, after every major disaster, a review is done to identify mitigation measures to prevent a recurrence and then allocate SDMF/NDMF funds for those measures. This loop ensures learning from disasters translates into action.
- **Strengthen Monitoring and Evaluation to make it outcome-focused rather than only input-focused:** A rigorous M&E framework should be developed for DRM funds, ensuring both input-focused and outcome-focused evaluation. It is proposed that NDMA works with States to define KPIs for fund usage. The outcome evaluation should systematically assess how mitigation projects, once completed, reduce disaster losses over time. Annual DRM Funds Impact Reports could be published.

- **Strengthen State Capacity and Accountability:** Technical assistance and training should be offered, through NDMA or MHA, to States on disaster risk reduction planning, efficient relief distribution, and financial management of SDRF. Best practices from better-performing States can be codified into guidelines for others. Moreover, accountability needs reinforcement; the CAG audits must be taken seriously. Any misuse of SDRF, like funds spent on non-disaster items and/or non-adherence to guidelines, should lead to corrective actions and perhaps impact future instalments.
- **Updating Norms and Guidelines:** The NDMA should periodically review and update the list of eligible disasters and activities based on experience and climate change trends. Also, financial norms (relief amounts) should be adjusted for inflation at regular intervals.
- **Enhance Flexibility in Utilization of Relief Funds:** To ensure SDRF/NDRF funds are fully effective, it would be useful to update and relax norms where needed. States could be allowed some flexibility to re-appropriate between SDRF sub-windows, temporarily draw on SDMF for immediate recovery if SDRF is exhausted, etc.
- **Establish databases of losses, damages and exposure:** An updated disaster event database including losses incurred, damage assessment, and settlement history for each major peril, would enable States to build a robust catastrophic modelling and their outputs – AAL, PML, exposures values can be used to compare the adequacy of the disaster funding and also determine the disaster risk financing needs for the states. Further, these inputs can help in quantifying the climate change implications on the State’s disaster financing.
- **Simplify and Expedite Approval Processes:** While maintaining accountability, the process to approve and release funds – both central (NDRF/NDMF) and state (SDRF/SDMF) – could be streamlined for speed.
- **Encourage Risk Transfer Mechanisms:** Over the long-term, the government can consider linking the DRI model with risk transfer instruments. While this goes beyond allocation formula, such a policy step can make funding more efficient.

The above-listed recommendations are detailed in ‘Chapter 4: Recommendations for strengthening Disaster Risk Financing Capabilities’ of this report. By implementing these recommendations – boosting capacity, simplifying procedures, incentivizing performance, integrating efforts, and maintaining flexibility – India can significantly improve the management and utilization of its disaster risk fund.

Chapter 1: Introduction

1.1. An Overview of Finance Commission Recommendations on DRM in India

Disaster Risk Management Financing in India began as the funding of relief expenditure, as early as the 2nd Finance Commission (FC). What began as the 'Margin Money Scheme' under the 2nd FC, further evolved over the years following an expenditure-based approach. The 9th FC moved away from the Margin Money Scheme, by placing earmarked funds at the disposal to the States, ex-ante, through the Calamity Relief Fund¹.

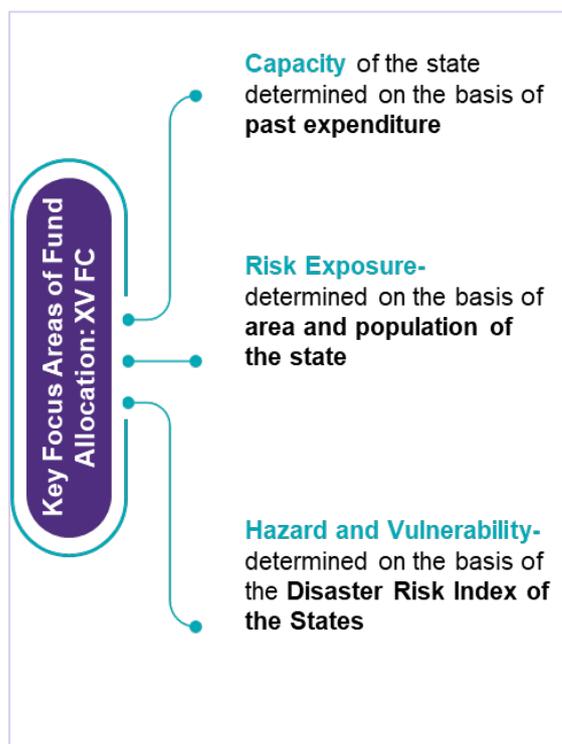
At the national level, the National Fund for Calamity Research was established by the 10th FC to provide a distinct funding mechanism in case of calamities of rare severity. The 11th FC recommended the establishment of a National Calamity Relief Fund (CRF), with 75% Central and 25% State government contribution¹.

The Disaster Management Financing in the country was institutionalized further by the Disaster Management Act of 2005, which led to the establishment of the NDRF (reconstituted from the NCCF), and the SDRF (merging the CRF for all States). Under the FFC, the DRM Funds were reconstituted further as the National Disaster Risk Management Fund (NDRMF), comprising the NDRF and NDMF, and the State Disaster Risk Management Fund (SDRMF), comprising the SDRF and SDMF. The FFC earmarked 20% of the overall allocation towards Disaster Mitigation and 80% towards Disaster Response².

The FFC also moved away from the expenditure-based method of allocation to a more balanced allocation method for DRM allocations at the State level. The following were considered: -

- 1) **Capacity** - determined by past expenditure of the State
- 2) **Risk Exposure** - determined by area and population of the State
- 3) **Hazard & Vulnerability** – determined by the Disaster Risk Index of the State³.

A snapshot of the key landmarks in the evolution of Disaster Financing in India is shown in Figure 1

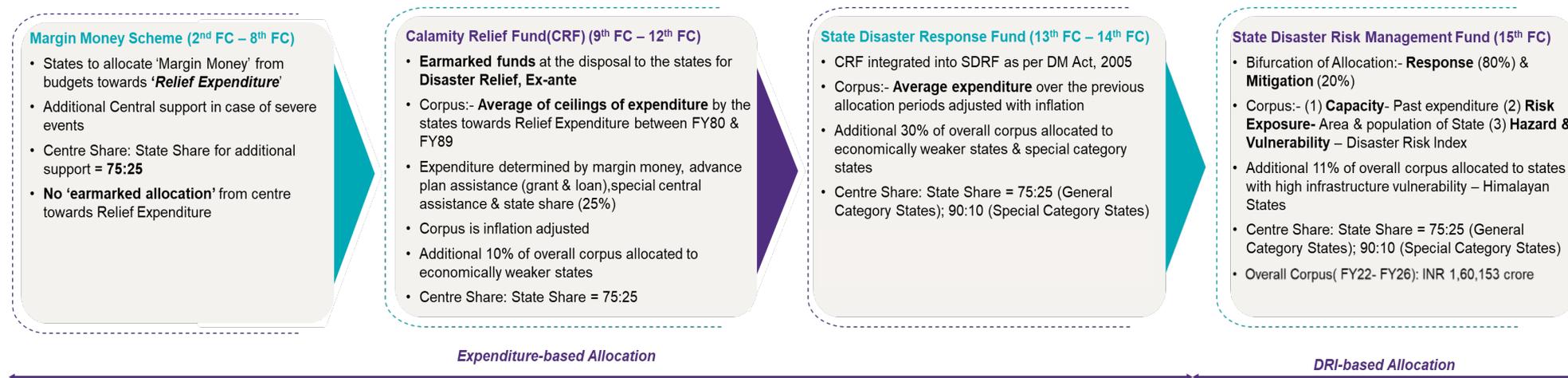


¹ Calamity Relief, 12th Finance Commission

² Disaster Risk Management, Fifteenth Finance Commission

³ XV Finance Commission (2020) Finance Commission in COVID Times Report for 2021-26 Volume II: 'Annex 8.3: Methodology for Determination of State Level Allocations of Disaster Management' pages 310-320

Disaster Management Fund Allocation at State Level



Disaster Management Fund Allocation at National Level

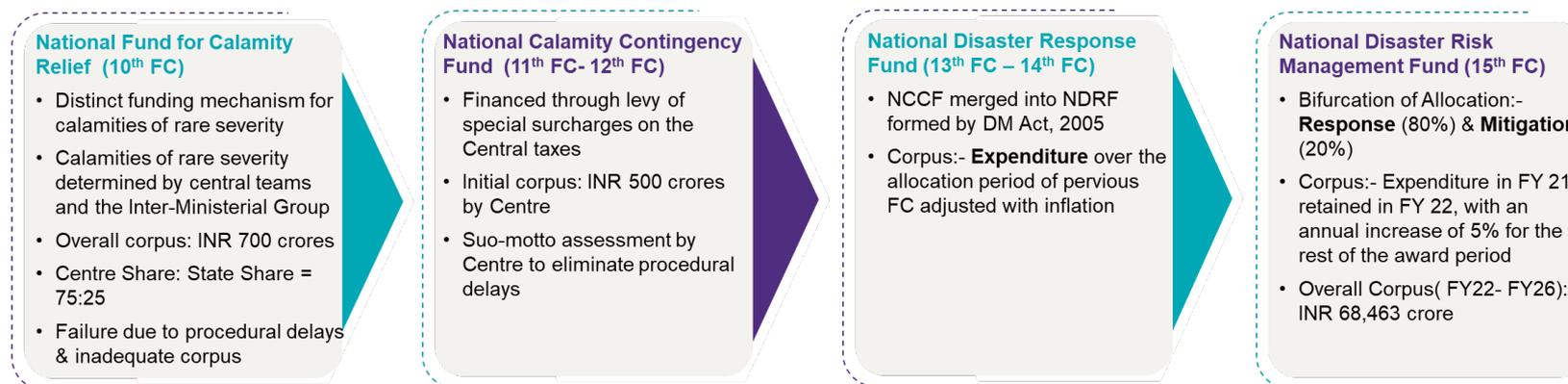


Figure 1: Snapshot of evolution of Disaster Risk Management Financing in India

1.2. Fifteenth Finance Commission Recommendations in India: A Snapshot

Constitution of the NDRMF & the SDRMF

The Fifteenth Finance Commission, formed under the provisions of Article 280 of the Constitution, was mandated to determine the division of financial management between the Union and the States. It reconstituted the NDRF and the SDRF as per the Disaster Management Act into the DRM Funds, the **National Disaster Risk Management Fund (NDRMF)** and the **State Disaster Risk Management Fund (SDRMF)**.

Under the FFC, the overall quantum of allocation towards the DRM funds increased significantly. The National corpus increased from INR 57,146 crores to INR 68,463 crores. At the State level, the overall allocation increased from INR 61219 crores to INR 160153 crores (around 161% increase). 80% of the overall allocation in the DRM funds were earmarked for response, and 20% for mitigation.

Methodology of Fund Allocation

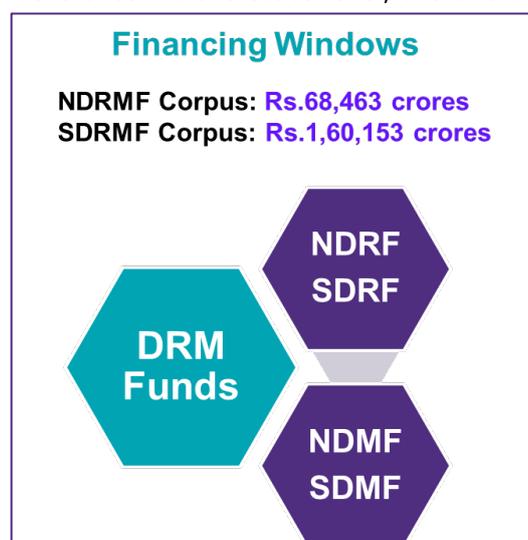
The FFC's methodology considered all phases and aspects of Disaster Management, bringing in a further layer through the bifurcation of National and State level funds into Response and Mitigation Funds. The methodology adopted by the FFC in the allocation of SDRMF has been detailed in Annexure 1.

Financing Windows for DRM Financing

State Disaster Response Fund (SDRF)

80% of SDRMF was earmarked towards Response Allocation. The Response allocations were further apportioned under sub-windows for Response & Relief (40%), Recovery & Reconstruction (30%), and Preparedness & Capacity building (10%).

The FFC also recommended that the States be provided the flexibility for reallocation (up to 10% of allocation) within the three sub-windows of SDRF.



SDRMF Allocation (FY22- FY26)	
SDRF Allocation (80%)	Rs. 128122 crores
Response and Relief (40%)	Rs. 64061 crores
Recovery and Reconstruction (30%)	Rs. 48046 crores
Preparedness and Capacity Building (10%)	Rs. 16015 crores
SDMF Allocation (20%)	Rs. 32031 crores
Total SDRMF Allocation	Rs. 160153 crores

Table 1: SDRMF Allocation (FY22-FY26)

National Disaster Response Fund (NDRF)

The sub-windows of Response & Relief (40%), Recovery & Reconstruction (30%), and Preparedness & Capacity building (10%) are also applicable to the NDRF. The overall NDRF allocation amounted to INR 54,770 crores. In cases of severe calamities, where the State has exhausted its SDRF resources, allocation under the NDRF would be provided under the 3 sub-windows. The NDRF allocation also has funds earmarked for certain priority areas:

NDRF Allocation Category	Total Allocation (INR crores)	Remarks
Resettlement of displaced people affected by erosion (under the Recovery & Reconstruction Sub-window)	1000	Alternate settlements to people from recovery & reconstruction window of NDRF
Expansion & modernization of fire services (under the Preparedness & Capacity Building Sub-window)	5000	Strengthening fire services at State level. Funds will be allocated through preparedness & capacity building window

Table 2: NDRF Allocation

State Disaster Mitigation Fund (SDMF)

As per the FFC, the mitigation funds shall be used for 'local level and community-based interventions which reduce risks and promote environment-friendly settlements and livelihood practices'. The overall allocation of SDMF for FY22 – FY26 was INR 32031 crores.

National Disaster Mitigation Fund (NDMF)

The NDMF was provided an overall allocation of 20% of NDRMF, i.e., INR 13692.6 crores. Within the NDMF, the FFC further earmarked funds for specific mitigation efforts.

NDMF Allocation Category (20%)	Total Allocation (INR crores)	States
Catalytic Assistance to develop district level drought mitigation	1200	Rs. 100 crores each to Andhra Pradesh, Bihar, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Telangana, and Uttar Pradesh
Reducing the risk of Urban Flooding	2500	Rs. 500 crores each for Mumbai, Chennai and Kolkata. Rs. 250 crores each for Bengaluru, Hyderabad, Ahmedabad and Pune
Managing Seismic & landslide risk	750	Rs. 250 crores each for Himachal Pradesh and Uttarakhand. Rs. 250 crores each for all seven States in Northeast
Mitigation measures to prevent erosion	1500	States should apply for these funds for undertaking erosion mitigation works.

Table 3: NDMF Allocation

Empowering Disaster Preparedness at Local Levels

Feasibility of District Disaster Response and Mitigation Funds, with allocation of resources by the State Governments should be explored. This will empower and improve disaster preparedness at local levels. The devolution of funds as well as building the capacity of Panchayati Raj Institutions will lead to decentralization in disaster preparedness and response.

Alternate Sources of Funding

Alternative and innovative DRF strategies including the issuance of Reconstruction Bonds, establishing Contingent Credit or Stand-by facility with IFIs, crowd funding and CSR funding along with Insurance and Risk Pooling at the National level was encouraged to be explored by FFC.

Insurance Interventions Proposed by FFC

- National Insurance scheme for disaster-related deaths
- Synchronising Relief assistance with Crop insurance

Disaster Database

The database was proposed to comprise disaster assessments, fund allocation details, expenditures, preparedness and mitigation plans.

1.3. The Disaster Risk Management Financing in India Review

A review of the disaster risk management financing landscape in India to inform the findings of the 16th Finance Commission of the Government of India

Objectives and Scope

The study aims to support the Sixteenth Finance Commission (SFC) by conducting a comprehensive review of the implementation of the Fifteenth Finance Commission's (FFC) disaster management grants.

The review was based on the Disaster Risk Management Financing across different States focusing on allocation, utilization, and impact on disaster risk mitigation, preparedness, response, and recovery. It also reviewed the fund allocation principles between the Union and the States. The scope of the review is depicted in Figure 2.

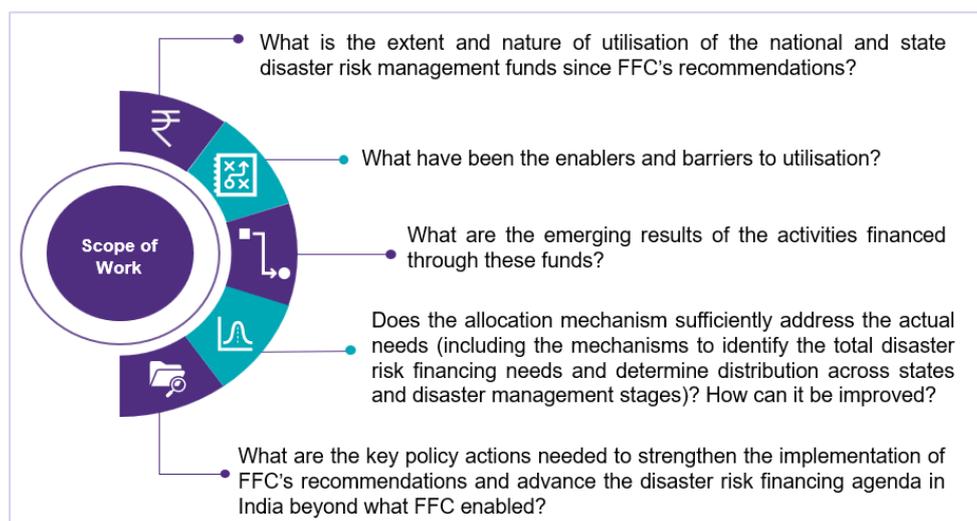


Figure 2: Scope of the Review

Review Components

The project encompasses a detailed review and analysis of three critical components as outlined in Figure 3.

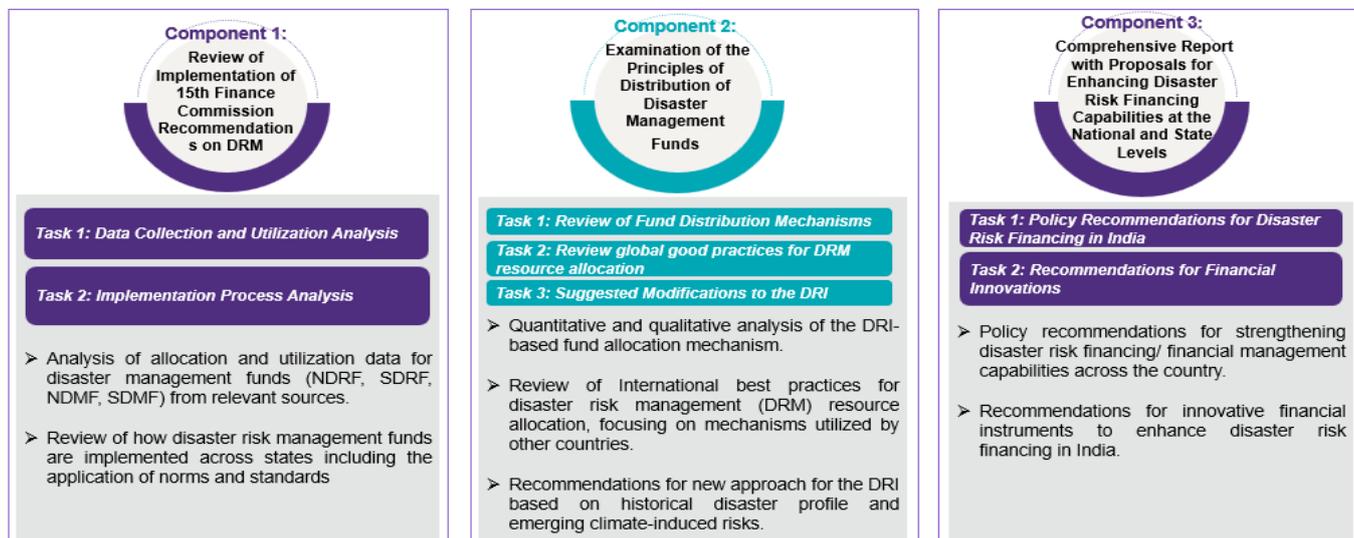


Figure 3: Summary of Tasks under the three components

1.3.1 Review Methodology

The review methodology combined both qualitative and quantitative techniques, enabling a detailed analysis of the data by triangulating information from diverse sources.

The review included an overall pan-India analysis, along with deep dive analysis specific to a representative sample of 7 States – Assam, Gujarat, Kerala, Madhya Pradesh, Meghalaya, Odisha and Uttarakhand – across the different review components. An illustration is provided below to present the key probe areas (derived from the broad areas of inquiry of the TOR) of the review mapped to the tasks performed across each of the Review Components as well as the sources of data.

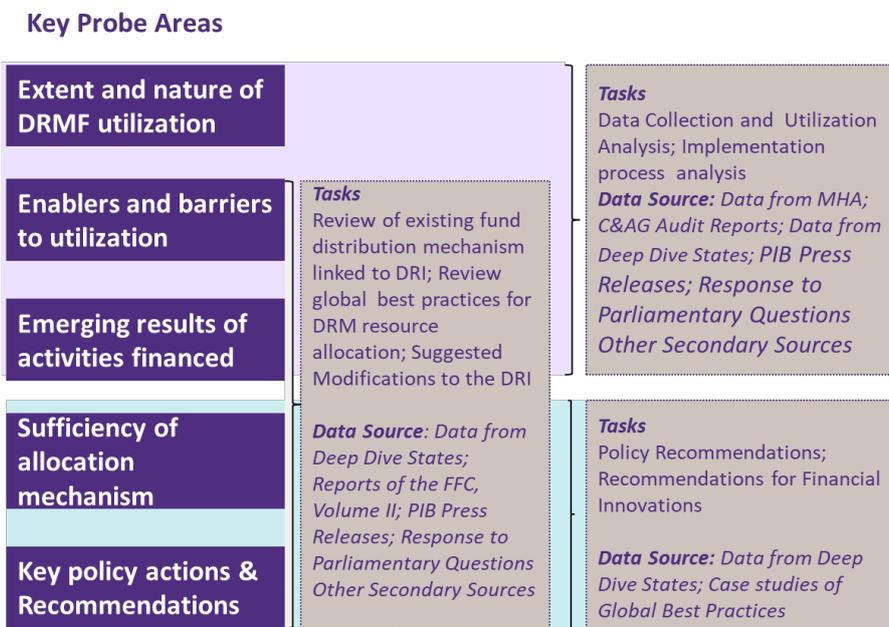


Figure 4: Overall approach for Review

State-level consultations were held with key officials in 5 out of the 7 Deep Dive States to understand State's experiences in utilization of DRM funds within the FFC period and seek insights on barriers, enablers and impact created.

Case studies were prepared for the 7 Deep Dive States to present their demographic and socio-economic profile, risk profile, and an overview of their specific experiences in implementation of the DRM funds under the FFC period.

The risk exposure and hazard & vulnerability characteristics of these States is presented in Table 4.

Deep Dive States	Risk Exposure	Hazard & Vulnerability
Assam	Area: 78,438 sq. km Population: 31,205,576	Composite Vulnerability Index: 13 Composite Hazard Index: 9 Disaster Risk Index Rank: 7
Gujarat	Area: 196,024 sq. km Population: 60,439,692	Composite Vulnerability Index: 5 Composite Hazard Index: 5 Disaster Risk Index Rank: 9
Kerala	Area: 38,863 sq. km Population: 33,406,061	Composite Vulnerability Index: 18 Composite Hazard Index: 11 Disaster Risk Index Rank: 27
Madhya Pradesh	Area: 308,252 sq. km Population: 72,626,809	Composite Vulnerability Index: 4 Composite Hazard Index: 15 Disaster Risk Index Rank: 4
Meghalaya	Area: 22,429 sq. km Population: 2,966,889	Composite Vulnerability Index: 26 Composite Hazard Index: 20 Disaster Risk Index Rank: 20
Odisha	Area: 155,707 sq. km Population: 41,974,218	Composite Vulnerability Index: 11 Composite Hazard Index: 4 Disaster Risk Index Rank: 11
Uttarakhand	Area: 53,483 sq. km Population: 10,086,292	Composite Vulnerability Index: 19 Composite Hazard Index: 6 Disaster Risk Index Rank: 15

Table 4: Snapshot of risk exposure and hazard & vulnerability profile of Deep Dive States

A review of the DRI-based fund allocation model was undertaken with the objective of examining whether the model adequately captures State-level vulnerabilities and contextual disaster risks, and how well it has performed in practice. The quantitative analysis of the DRI-based fund allocation model covered the following four parameters of (i) Statistical consistency of the allocations, (ii) Per-capita equity of the allocations, (iii) Hazard alignment or the correlation of the allocations with hazard exposure metrics, and (iv) Correlation of allocations with historical disaster impacts. Under qualitative analysis, the parameters considered include (i) Gaps in vulnerability indicators, (ii) Challenges of static hazard scoring in a changing climate, (iii) Governance factors affecting the performance of the model, and (iv) efficiency of fund utilization under SDRF.

A benchmarking Exercise was carried out to examine India's DRM Financing Model against International Best Practices. A few of the major countries studied include Mexico, Philippines, Turkey, USA, Indonesia, Brazil, Germany, Morocco, Australia, and New Zealand. The selected countries represent a diverse mix of both developed and developing nations, each characterized by a high level of vulnerability to disasters. Similarities and differences in DRM needs, funding mechanisms, and institutional structures were assessed. Practices adopted to address challenges similar to that of India were reviewed and the

adaptability of these successful models to India's federal structure and multi-hazard risk landscape was studied.

Challenges & Limitations

The key challenges encountered, and limitations faced during the review are as follows:

- **Data gaps:** Incomplete or unavailable data for FY22–FY25 on fund release and utilization under SDRF, NDRF, SDMF, and NDMF. CAG audits were missing for some states (e.g., Goa, West Bengal); access to updated/ complete data from NDMIS was limited.
- **Limited consultations:** Key officials were often unavailable due to budget sessions, trainings, or emergencies.
- **Unclear SDRF balances:** Opening balances did not distinguish NDRF releases or carryover funds, complicating analysis.
- **COVID as outlier:** SDRF utilization spiked in FY22 due to the pandemic.
- **Inadequate tagging:** Sub-financing (Response, Recovery, Preparedness) window-wise utilization data (Response, Recovery, Preparedness) was often missing.
- **Limited project-level insights:** Few states could provide detailed expenditure heads or project-level breakdowns information on project type, nature of utilization, expenditures, and others.
- **Centre–State data mismatches:** Discrepancies between State-reported data and CAG/NDMA records required repeat validation efforts.

Chapter 2: Implementation of DRM Funds recommended by the Fifteenth Finance Commission

India's Fifteenth Finance Commission significantly revamped disaster financing by creating a comprehensive State Disaster Risk Management Fund (SDRMF) and National Disaster Risk Management Fund (NDRMF) split into four components – the State Disaster Response Fund (SDRF) and National Disaster Response Fund (NDRF), for relief/response, and the State Disaster Mitigation Fund (SDMF) and National Disaster Mitigation Fund (NDMF) for risk mitigation.

In this Chapter, an analysis of the implementation of the DRM funds is presented, with a review of the allocation and utilization of these funds, institutional mechanisms, enablers and barriers, and impact achieved.

2.1 State Disaster Response Fund

The SDRF is the cornerstone of financing for routine disaster response at the State level, constituted under Section 48(1)(a) of the DM Act 2005; all States have SDRF allocations.

The FFC recommended INR 1,28,122.40 crores of allocation to SDRFs of States for FY 22 – FY 26; this includes Central share of INR 98,080.80 crores and State share of INR 30,041.60 crores and is more than double the 14th FC period – reflecting higher risks and the new allocation formula based on risk, exposure and vulnerability. SDRF receives 80% of the total State DRM Funds and demarcates 40% for Response & Relief, 30% for Recovery & Reconstruction, and 10% for Preparedness & Capacity-Building.

Extent and Nature of Utilization of SDRF

The findings on the extent and nature of utilization of SDRF are summarized below:

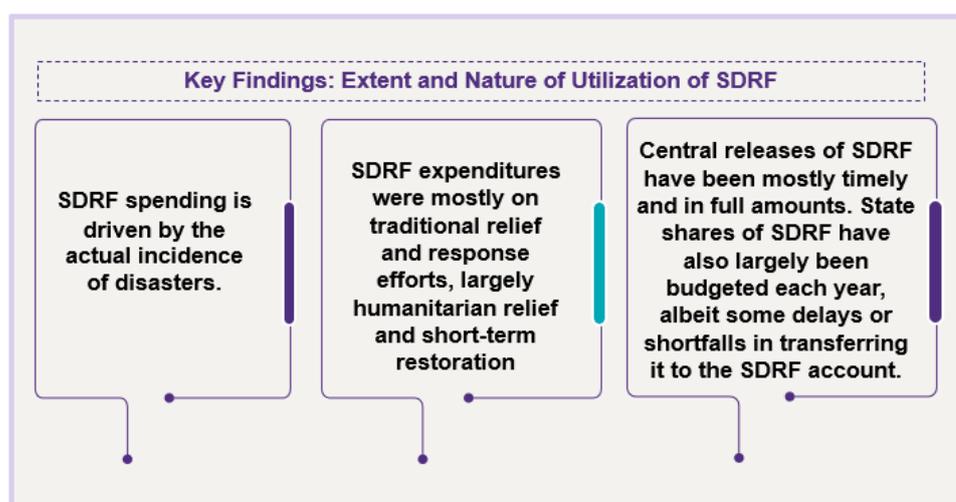


Figure 5: Key Findings- Extent and Nature of Utilization of SDRF

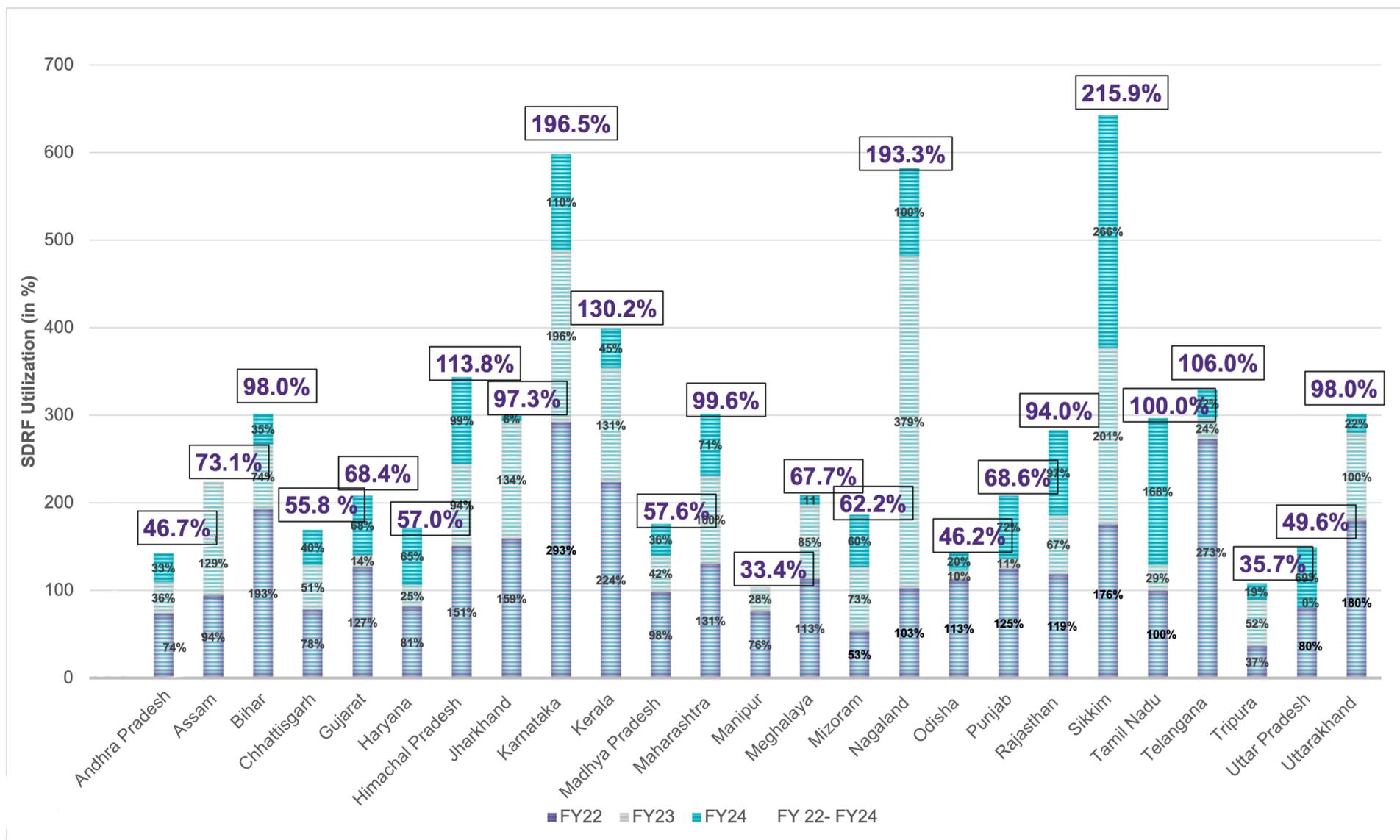


Figure 6: SDRF Utilization vs Allocation (FY22, FY23 & FY24)

1. SDRF spending is driven by the actual incidence of disasters.

- **Disaster-prone States often use a large portion or all their SDRF allocation each year.** These States often exhaust their yearly central SDRF installment and dip into balances or seek NDRF for additional needs.
 - Uttarakhand in 2022–23 spent its entire annual SDRF provision of INR 874.4 crores (90:10 cost sharing basis) on a series of rainstorms and landslides as per the CAG Audit.
 - As per the State Relief Commissioner’s annual expenditure statements of SDRF, Odisha has spent INR 2773 crores between FY 22, and FY 24 towards relief, providing temporary shelter to impacted people and repair and reconstruction of infrastructure impacted by cyclones & floods.
 - Assam, with yearly floods, had significant spending of SDRF. Assam spent INR 647.9 crores in 2021-22 and about INR 445 crores in 2022-23 mainly on flood relief.
 - Kerala had heavy drawdowns during the 2018–2020 floods and landslides and continued to utilize SDRF for monsoon flood response each year, for example – INR 459.7 crores in 2022–23.
- **States with fewer or less frequent disaster events tend to have partial (moderate or low) utilization and growing fund balances.** Over 2020–24, around 9 States accumulated substantial unspent SDRF balances during periods of low incidence of disasters.

Punjab and Haryana faced occasional floods and typically utilized less than 50% of their allocation in the years of mild incidence. They were also seen to have a negative utilization percentage in the 14th FC period due to their accumulated fund balances.

 - Madhya Pradesh and Chhattisgarh, largely facing slow-onset disasters like drought, often did not fully use their annual SDRF allotments in years without a major disaster event. This led to carry forwards to subsequent years; MP spent INR 854 crores out of roughly INR 2,038 crores available in FY 23, leaving a large balance.
 - Andhra Pradesh in 2023-24 had a large INR 2,570 crore opening balance from prior years, due to fewer large disasters in the previous years and a surrender of unused funds from the Agriculture Department and used only INR 428 crore in the same year.
- **The one-time deviation allowed by the MHA in the context of COVID-19 pandemic response reflects flexibility in a crisis.** As a special case, up to 50% of SDRF allocation was permitted to be used for COVID containment measures in FY 21 and FY 22. At least 23 States utilized this window for quarantine centres, oxygen, migrant relief, etc. which temporarily altered normal utilization patterns. Utilization percentage of SDRF is greater for FY 22 than FY 23 for 19 out of 27 States.

- **There is significant variation in the utilization of SDRF across India's diverse risk profile.** Unspent balances carried forward each year were common in about half of the States, even while the other States exhausted their funds and sought additional financial support. By the end of 2024, States like Himachal Pradesh, Kerala, Sikkim and Uttarakhand had relatively low SDRF balances since funds were largely utilized, whereas States like Punjab, Jharkhand, Haryana, Rajasthan and Andhra Pradesh had large surpluses in SDRF. In FY 23, Assam used 129% and even required more from NDRF for flood relief. Similarly, in FY 24, Sikkim's SDRF utilization was 266% and that of Tamil Nadu was 168%.

2. **SDRF expenditures were mostly on traditional relief and response efforts, largely humanitarian relief and short-term restoration**

- SDRF spending was mostly on traditional response and relief needs, with very limited expenditure for recovery and/or preparedness. Till guidelines for the financing sub-windows (40% SDRF for immediate relief/response, 30% for recovery/reconstruction, and 10% for capacity-building) were issued, States did not distinguish among the sub-windows in spending. In the second half of 2024, the MHA issued separate guidelines to operationalize the Reconstruction sub-window, requiring States to do PDNA and formulate projects for long-term rebuilding funded by SDRF/NDRF. Thus, during 2020–23, SDRF spending remained focused on response/relief.
- **The nature of SDRF utilization has been largely for humanitarian relief and short-term restoration.** As per items and norms prescribed by MHA, SDRF can be used for relief measures pertaining to lives lost, injuries, housing damages, agriculture losses, cattle perished, provision of food and drinking water, provision of clothing, healthcare, etc., and immediate repair of utilities. By mandate, SDRF shall be used only for providing immediate relief to the victims of notified disasters. It cannot fund permanent reconstruction beyond the specified relief repairs or long-term DRR projects. Available data suggests that the vast majority of actual SDRF spending has been largely on ex-gratia payments, relief packages (cash or in-kind) for affected households, temporary shelter and livelihood support, urgent infrastructure restoration of roads and bridges on a temporary basis, and pandemic relief.

3. **Central releases of SDRF have been mostly timely and in full amounts. State shares of SDRF have also largely been budgeted each year, albeit some delays or shortfalls in transferring it to the SDRF account.**

Across India, annual Central SDRF releases have been close to 100% of due shares, amounting to over INR 65,000 crores during 2021-25. Apart from a few States like Assam, Chhattisgarh, Manipur and Mizoram where there has been slight delays or shortfalls in

transfer to SDRF accounts, States have largely complied with SDRF norms for budgeting and transfer.

Implementation and Institutional Mechanisms of SDRF

The SDRF is managed by the State Government. The money in SDRF remains available year-on-year; it will not lapse and will be carried forward if unspent. Each State's Finance Department maintains the account, and releases money to the State Relief Commissioner (SRC) and/or State Department of Disaster Management for actual expenditure on approval of the State Executive Committee (SEC).

The findings on implementation and institutional mechanisms are summarized below.

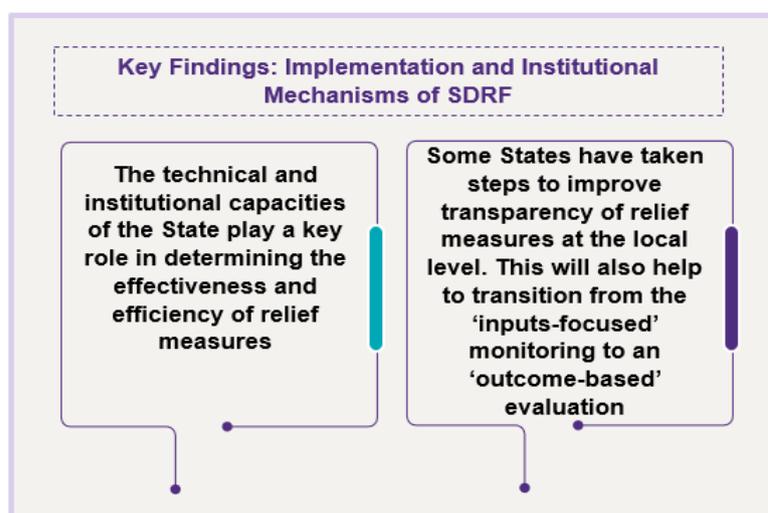


Figure 7: Key Findings: Implementation and Institutional Mechanisms of SDRF

- 1. The technical and institutional capacities of the State play a key role in determining the effectiveness and efficiency of relief measures.** For example, the capacities of the Kerala SDMA and Gujarat SDMA have been instrumental in supporting the States to utilize relief funds. District Collectors (DCs) or District Disaster Management Authorities (DDMAs) draw from SDRF through the State treasury upon disaster events. They manage relief distribution on the ground – organizing relief camps, paying out ex-gratia assistance, etc. using SDRF allocations given to them. Many States have formal procedures for DCs to submit relief bills to State headquarters for reimbursement from SDRF. Madhya Pradesh has established (a) a State-level disaster management State command center, equipped with the latest technology for the smooth coordination and management of disasters, (b) a State-of-the-art disaster situation room, Vallabh Bhawan Situation Room (VBSR) for command, control, coordination, and monitoring of disaster situations at the State level and c) an online system known as the Disaster Warning and Response System (DWRS), to provide warnings to all stakeholders and coordinate response, and relief operations.

Karnataka, which has among the highest SDRF utilization during FY 22- FY 24 has effective DRR initiatives and frameworks at District as well as Departmental levels with Enterprise

Resource Planning for monitoring progress of various initiatives. The State used Management Information Systems such as the Karnataka State Disaster Management Information System, and Geospatial Enabled District Disaster Management Plan which enable effective tracking disaster management activities in the State. State Disaster Management Plans, Action Plans: Flood, Heat Wave, Lightning & Thunderstorm, Landslides & Earthquake, Departmental DM Plans, GPDMPs promote policy and planning in Disaster Management further strengthening the DM frameworks in the State.

2. Some States have taken steps to improve transparency of relief measures at the local level. This will also help to transition from the ‘inputs-focused’ monitoring to an ‘outcome-based’ evaluation. Kerala established an online portal to track disbursement of relief to beneficiaries, thereby enhancing transparency at the local level. Assam is now in the process of adopting a web-based system as part of the national DRMIS (Disaster Risk Management Information System) to track SDRF disbursements by District. Monitoring in Assam is currently for accounting for expenditures and needs to evolve towards ensuring outcomes (safer communities).

Gujarat and Madhya Pradesh have integrated financial management system that tracks SDRF releases to districts. Gujarat publicly disclosed district-wise relief disbursements after Cyclone Tauktae. In Madhya Pradesh, the Relief Commissioner’s office maintains an online tracking system of SDRF expenditures by District and by disaster event.

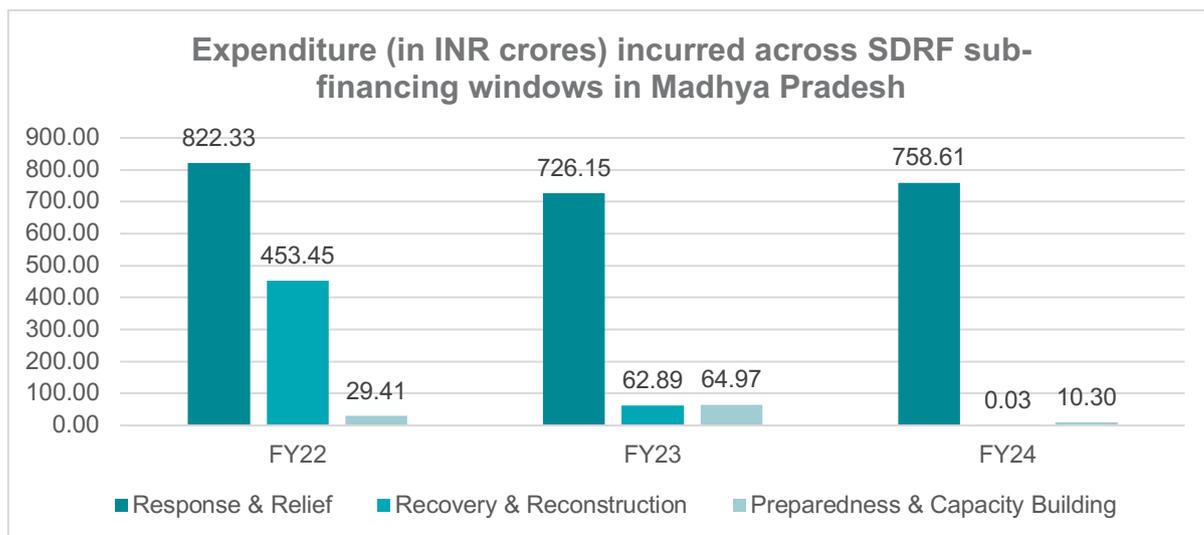


Figure 8: Expenditure incurred across SDRF sub-financing windows in MP

Enablers and Barriers to Utilization of SDRF

Several factors have enabled effective SDRF utilization in many States. Despite certain barriers, it is noted that SDRF funds generally get utilized for every eligible need for disaster response

and relief, as these funds are the primary source to be tapped in case of a disaster. Conversely, in absence of disasters, funds lie unused by design, which is not necessarily a negative, as they serve as contingency reserves. The challenge lies in optimizing the use of 'surplus' funds for preparedness.

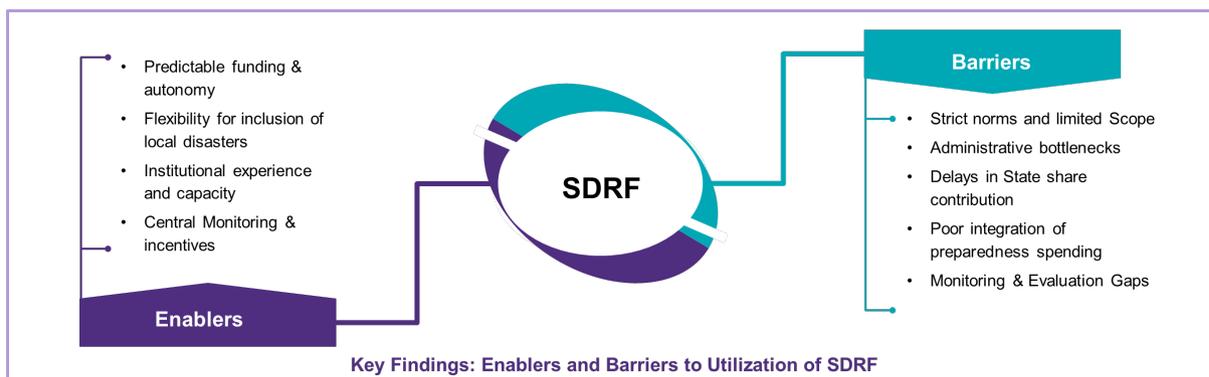


Figure 9: Key Finding- Enablers and Barriers to utilization of SDRF

The **key enablers** to SDRF utilization are described below:

- Predictable funding and autonomy:** States know their SDRF allocation in advance and have funds which are 'parked and, therefore, ready for use at the time of disasters. This financial preparedness is a huge enabler; it allows immediate response without waiting for external support and/or aid. Also, States have autonomy to use SDRF for any eligible disaster, giving flexibility to quickly tackle local calamities. For instance, States could swiftly sanction relief for localized fires or lightning strikes from SDRF without central approval, which encouraged timely use. States also have the flexibility to request for advance release of SDRF instalments depending on their needs. An example is Bihar for which an advance release of 2nd installment of Centre's share of SDRF amounting to INR 213.75 crores was approved in the year 2019-2020; the same provision can be availed as per requirement in the FFC period also.
- Flexibility for inclusion of local disasters:** States have the discretion to notify certain disasters specific to their regional context, allowing them to utilize up to 10% of their annual SDRF allocation for such events. This discretion to notify local disasters empowers States to respond to hazards unique to them. Many States have notified perils like lightning, heatwaves, snakebite, etc., under this provision and used SDRF money to support victims. This has increased utilization in States where such incidents are common. Bihar and Odisha have extensively used SDRF for lightning strikes which caused several deaths, despite lightning not being a 'notified disaster' under NDRF. Kerala has notified coastal erosion, lightning, strong winds, soil piping, heat wave and human-wildlife conflict as local disasters.
- Institutional experience and capacity:** States with active SDMA's find it easier to assess needs and disburse SDRF quickly, maximizing utilization. States with advanced institutional capacities conduct regular training of field officers on relief norms, damage

assessment systems, etc., and pre-identify beneficiaries. Also, for cyclone damage assessments, several States employ various methodologies, including aerial surveys conducted by State officials to evaluate the extent of damage and to expedite relief and rehabilitation measures. The capacities of Line Departments are also crucial for undertaking assessments and ensuring impactful expenditures within stipulated timelines. Therefore, such capacities in SDMA and across the chain of institutions involved in DRM ensure full and efficient use of available SDRF funds.

- **Central Monitoring & guidelines:** Unused SDRF balances beyond a certain level can affect NDRF assistance, since States must show that they've used SDRF up to a point. These rules incentivize States not to accumulate funds unnecessarily and, thus, act as an enabler for reasonable utilization.

The **key barriers** to SDRF utilization are described below.

- **Strict norms and limited Scope:** The utilization of SDRF is restricted by the defined norms. Many genuine needs after disasters – for example, compensation for fully destroyed houses beyond the capped amount, restoration of livelihoods, mental health support, etc. – are outside SDRF's scope. States cannot use SDRF for those, even if balance funds remain. Such unused balances may get construed as 'under-utilization' or 'limited need for utilization', whereas, in reality, relevant needs exist but are not eligible under the fund. The prescribed cost norms under SDRF norms are not aligned to the actual cost norms prevalent across all States; this is especially relevant for States and Gujarat which find it challenging to ensure rebuilding quality infrastructure due to gaps in prescribed cost norms vis-à-vis actual requirements on ground.
- **Administrative bottlenecks:** There are cases of delays in damage assessments and beneficiary identification which impede SDRF disbursement. Manual processes, limited human resources, delay in data consolidation, requirement for multiple approvals for even small expenditures slow the relief distribution. In Assam, significant delays (6 to 8 months and sometimes more than a year) were observed in the process of appraisal of proposals, payments to contractors for SDRF works, and processing of disaster relief payments. According to a study of a few cases under process in Nagaon District, it takes 10-12 months to process the payments. The delays are largely due to time taken for review and approval at various stages. In Bihar, for instance, audit reports noted delays in relief payment to flood-affected people due to verification issues, despite funds being available. This undermines timely utilization and sometimes leads to beneficiaries not receiving full entitlements, leaving money unused.
- **Delays in State share contribution:** Some States have faced issues with the timely release of their share (25% or 10% cost share), which may be attributed to procedural delays, fiscal stress, etc. If the State share is not deposited, it constrains the available pool of funds. A few States were late in crediting funds to the SDRF. For example - Chhattisgarh, Manipur, and Mizoram have received the Central Share of SDRF to the State Public

Account in FY 22 and FY 23. In FY 22, the Centre and State shares were not transferred to the SDRF in Manipur. In FY 23, the Centre and State shares were not transferred to the SDRF in Chhattisgarh, Manipur, and Mizoram. Assam and Mizoram have only made partial transfers (INR 347 crores and INR 22.3 crores respectively) of the Centre and State shares in FY 22. The remaining States do eventually transfer their share. Still, any delay can hamper immediate fund availability when a disaster strikes.

- **Poor integration of preparedness spending:** The provision of using up to 10% of SDRF for capacity-building including training, equipment, etc. helps to utilize funds in years of low/mild or no disaster incidence and improve future response. The Guidelines on Constitution and Administration of Preparedness and Capacity Building Funding Window under NDRF and SDRF were issued in April 2020. The States of Assam, Madhya Pradesh and Uttarakhand show some spending in the P&CB window from FY 22 onwards. However, States like Kerala have not tagged any expenditures to the P&CB sub-financing window.
- **Monitoring & Evaluation Gaps:** While financial reporting is robust, monitoring of outcomes is limited. So, there are no mechanisms to assess whether relief reached the intended beneficiaries and improves their conditions. Some States lack feedback loops to assess if SDRF spending achieved the intended relief. This can perpetuate inefficiencies, for example - continuing to allocate standard relief that might not fully meet needs.

Impact of Utilization of SDRF

This study focuses on the utilization of SDRF funds at the State level and does not include methods to assess the direct impact on disaster-affected individuals. While the analysis of fund usage provides insights into potential areas of benefit, the actual impact can only be determined by examining outcomes from the perspective of the beneficiaries. A review of the utilization of funds indicates the following potential areas of impact:

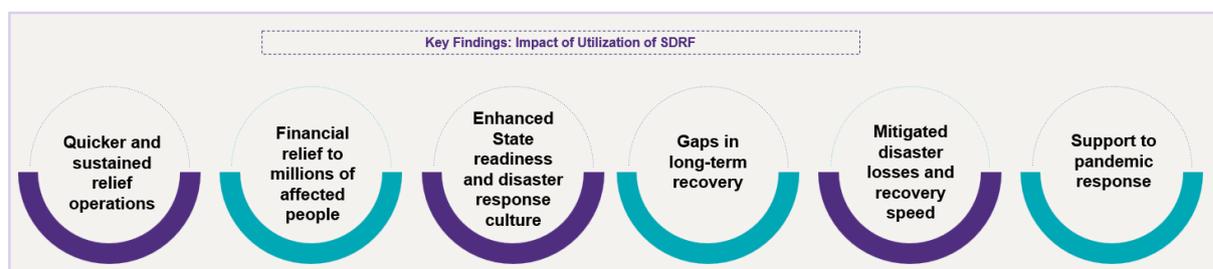


Figure 10: Key Findings- Impact of Utilization of SDRF

- **Quicker and sustained relief operations:** The presence of SDRF ensured that States could launch relief operations immediately and sustain them until normalcy, without always waiting for external aid. This undoubtedly saved lives and reduced suffering. For example, during the Assam floods of 2022, SDRF money was used to rescue marooned families, operate hundreds of relief camps for weeks, and feed over half a million people.

Such large-scale operations would be impossible without a ready fund. Similarly, in cyclones like Cyclone Fani in Odisha and Cyclone Nivar in TN, SDRF financed evacuation logistics and emergency supplies that prevented casualties and epidemics post-disaster.

- **Financial relief to millions of affected people:** From 2020–2024, SDRF expenditures have translated to direct cash or material assistance to millions of disaster victims. CAG reports and State data indicate, for instance, that over 2 million farmers in Maharashtra received SDRF compensation for crop losses due to excessive rains in 2021–22, providing a buffer to their incomes. Likewise, lakhs of poor families in North-East States regularly receive flood relief – rice, dal, tarpaulins – funded by SDRF in each monsoon. This has the potential for significant social impact – preventing extreme hardship and destitution in disaster-hit communities, albeit temporarily. The ex-gratia for death/injury from SDRF has supported thousands of families, offering some economic security after losing breadwinners.
- **Enhanced State readiness and disaster response culture:** Knowing that a dedicated fund of sizeable volume exists has improved the disaster response culture in States. Administrations were able to plan for pre-contracting suppliers for relief materials and training response teams because they are assured of funding.
- **Mitigated disaster losses and recovery speed:** While SDRF's mandate is relief, its effective use contributed to loss reduction and faster recovery. By providing essentials like food, water and medical aid immediately, it potentially prevents secondary disasters like disease outbreaks or famines. SDRF-funded quick repairs of infrastructure like plugging breached embankments or restoring power reduce downstream losses. Also, by giving small grants to repair houses or replace livestock, it helps families to start rebuilding quickly, thus reducing the long-term economic impact.
- **Support to pandemic response:** A noteworthy impact was on the COVID-19 response in 2020–21. SDRF flexibility allowed States to divert funds to pandemic relief. Millions of migrant workers were given food and transport, quarantine centers were set up, and purchase of protective gear were undertaken using SDRF. This undoubtedly saved lives during the first wave when budgetary allocations were not yet in place. It showcased SDRF's adaptability to an unprecedented disaster.

2.2 National Disaster Response Fund

The NDRF is a Central fund for major disasters, constituted under Section 46 of the DM Act 2005. It supplements State SDRF in cases of “disasters of severe nature” when State resources fall short. The FFC allocated a total INR 54,770 Crore for NDRF for 2021–26 – a sharp increase over the 14th FC period – enabling greater central support for calamities.

Trends in NDRF Releases (FY22–25)

Analysis of NDRF releases, based on Ministry of Home Affairs (MHA) data on NDRF Release and Allocation, reveals the following trends during FY22–25:

- High Release States: Karnataka was the only state with NDRF releases exceeding INR 2,000 Cr.
- Moderate Release States: Two states, Maharashtra and Bihar, received NDRF releases in the range of INR 1,001–2,000 Cr. While four states, Himachal Pradesh, Tamil Nadu, Gujarat, and Madhya Pradesh, recorded releases in the range of INR 501–1,000 Cr.
- Low Release States: Eleven states had releases between INR 0–500 Cr: West Bengal, Assam, Sikkim, Odisha, Andhra Pradesh, Nagaland, Tripura, Mizoram, Uttar Pradesh, Rajasthan, and Jharkhand.
- 20 out of 29 states had NDRF releases specifically for Fire Services, namely: Karnataka, Himachal Pradesh, Tamil Nadu, West Bengal, Assam, Sikkim, Odisha, Andhra Pradesh, Nagaland, Tripura, Mizoram, Uttar Pradesh, Uttarakhand, Punjab, Telangana, Chhattisgarh, Goa, Manipur, Meghalaya, and Mizoram.

Extent and Nature of Utilization of NDRF

The findings on extent and nature of utilization of NDRF are summarized below.

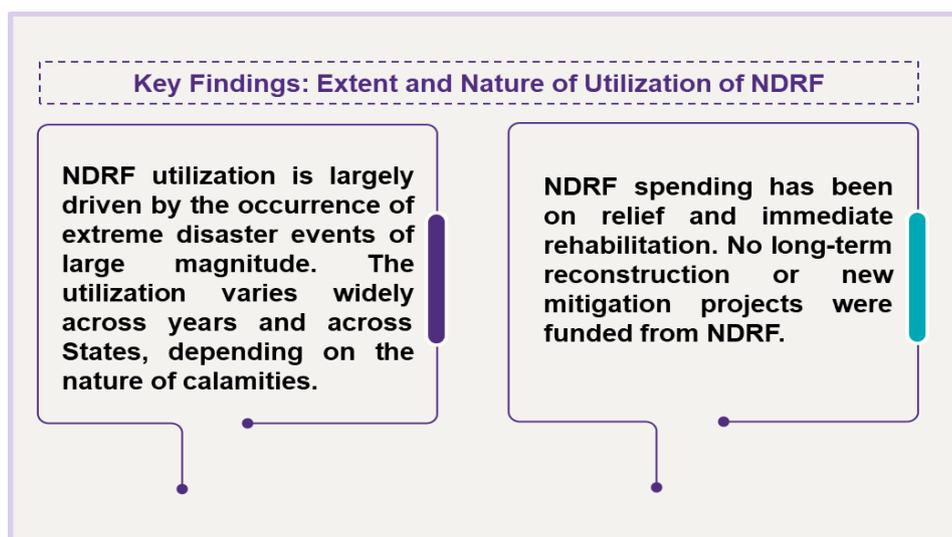


Figure 11: Key Findings- Extent and Nature of Utilization of NDRF

1. NDRF utilization is largely driven by the occurrence of extreme disaster events of large magnitude. The utilization varies widely across years and across States, depending on the nature of calamities.

- **Overall, the NDRF has been substantially drawn down for major disasters in this period, including cyclones, floods, and extreme rainfall events.** For example, in FY 22 alone, INR 7,342 crores were disbursed from NDRF across States reflecting severe events like flood damage in Karnataka and Maharashtra, and cyclones and floods in Bihar, Gujarat and Tamil Nadu.

- **NDRF utilization levels are higher during those years with higher frequency and severity of disasters.** In 2020–21, NDRF was tapped for Cyclone Amphan in West Bengal and Odisha, and for COVID-19 response as a special case. By 2021–22, severe monsoon floods and cyclones saw big NDRF releases. Karnataka received INR 1,623 crores. Maharashtra, Bihar and Gujarat received NDRF in the range of INR 1000 – 1060 crores. Tamil Nadu and Odisha received INR 566 crores and INR 500 crores. Andhra Pradesh, West Bengal, Madhya Pradesh, and other States also got NDRF aid in that year for various flood and drought events. The total Central relief provided was roughly INR 7,300 crores, indicating robust utilization in disaster-heavy years. In contrast, years with fewer “severe” disasters see lower NDRF drawdown, an example is 2023-24 which shows moderate usage of NDRF. Himachal Pradesh received INR 787.25 crores for floods and landslides, Sikkim received INR 81.89 crores for GLOF, etc. while some big States did not have any requirement for NDRF.
- **NDRF utilization correlated with hazard exposure of States.** States like Odisha, West Bengal, Andhra Pradesh, Tamil Nadu, Gujarat, Maharashtra, Assam, Bihar, and Uttar Pradesh have accessed NDRF frequently due to cyclones or floods. Hill States like Uttarakhand and Himachal Pradesh have tapped NDRF for landslides, cloudbursts, etc. In contrast, States with fewer high-impact disasters and/or those managing these disasters within SDRF have minimal NDRF utilization, few examples are Punjab, Haryana, several NE States in certain years. Notably, Karnataka availed large amounts of NDRF relief (~INR 1600 crores) in 2021 due to back-to-back floods and drought; this illustrates that even States with moderate hazard exposure can become top beneficiaries when severe events strike.
- **NDRF support has been crucial in States which exhausted SDRF in the aftermath of major disasters.** NDRF was utilized after large-scale floods in Karnataka and Bihar, cyclones Amphan and Yaas in Odisha, landslides and cloudbursts in Uttarakhand and Himachal Pradesh in 2023, and other major disasters that exceeded SDRF capacity.

2. NDRF spending has been on relief and immediate rehabilitation. No long-term reconstruction projects were funded by NDRF.

- **NDRF funds have been spent on approved relief measures per MHA norms.** Expenditures include (i) immediate cash relief to affected households, (ii) gratuitous relief - food, water, medicine, etc.), (iii) reconstruction of damaged small houses, (iv) agricultural input subsidies, (v) repair of critical public infrastructure - on a temporary basis, (v) ex-gratia for deaths, (vi) assistance for livestock losses, and others. For example, after the 2020 cyclones and 2021 floods, large portions of NDRF assistance in coastal States like Gujarat, Odisha and West Bengal were utilized on house rebuilding grants and livelihood relief for farmers/fishermen.
- **NDRF remained focused on short-term recovery, with limited utilization for long-term reconstruction or new preparedness projects.** Guidelines for Recovery &

Reconstruction (R&R) and Preparedness & Capacity-Building (P&CB) became available in August 2024. Their utilization falls at the tail end of the period; NDRF's R&R window is now being used to fund resettlement of erosion-affected communities and fire services modernization. An allocation of INR 530 crores has been approved under the R&R sub-window has been approved for post-landslide recovery and reconstruction in Kerala in FY 25.

Implementation and Institutional Mechanisms of NDRF

The NDRF is fully financed by the Central Government through the National Calamity Contingency Duty and general budget. It is operated by the MHA in consultation with the NDMA.

The findings on implementation and institutional mechanisms of NDRF are summarized below.

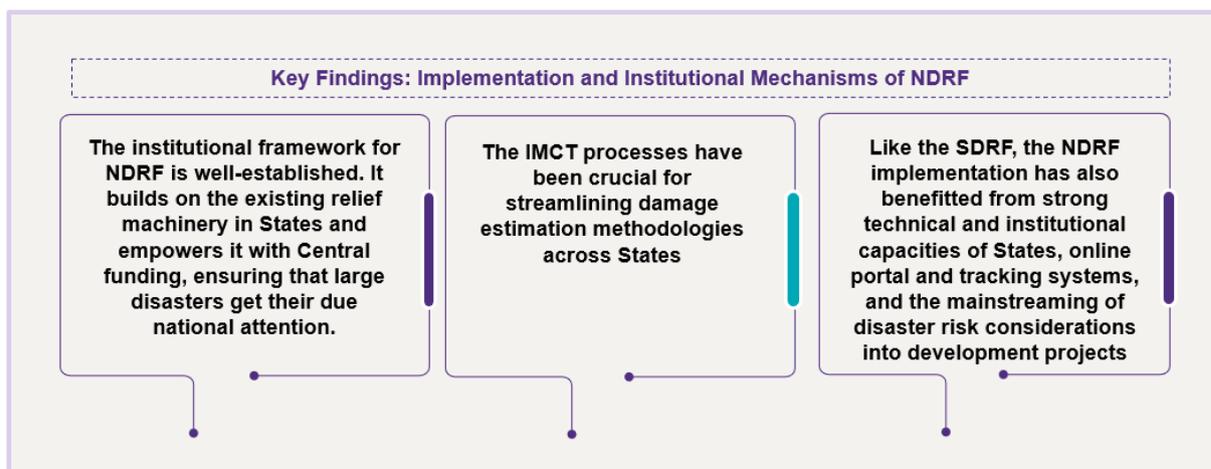


Figure 12: Implementation and Institutional Mechanisms of NDRF

1. **Overall, the institutional framework for NDRF is well-established. It builds on the existing relief machinery in States and empowers it with Central funding, ensuring that large disasters get their due national attention.** States request NDRF aid via memoranda after exhausting available SDRF to a significant extent; as per guidelines, States must first use $\geq 50\%$ of their SDRF balance before qualifying for NDRF support. The NDRF implementation modalities which build on the existing network of SDMA, DDMA, District Collectors and Relief Commissioners while ensuring adherence to Centre's norms and audit compliances help to ensure that NDRF expenditures stay on track and are meaningfully utilized.
2. **The Inter-Ministerial Central Teams (IMCT) processes have been crucial for streamlining damage estimation methodologies across States.** The reports of the IMCT formed the basis of High Level Committee (HLC) reviews and fund approvals. As on 25th November 2024, a total of 12 IMCTs have been constituted for on-the-spot assessment of damages caused due to calamities during 2024-25.

3. Like the SDRF, the NDRF implementation has also benefitted from strong technical and institutional capacities of States, online portal and tracking systems, and the mainstreaming of disaster risk considerations into development projects. In addition to the systems and portals mentioned in the earlier section, Gujarat employed GIS mapping and dashboards to monitor the progress of infrastructure restoration. These monitoring tools ensured that the NDRF was effectively utilized for intended works within a year.

Enablers and Barriers to Utilization of NDRF

NDRF is a fully Central fund outside State budgets. This design, by itself, is a major enabler for prompt relief in large disasters.

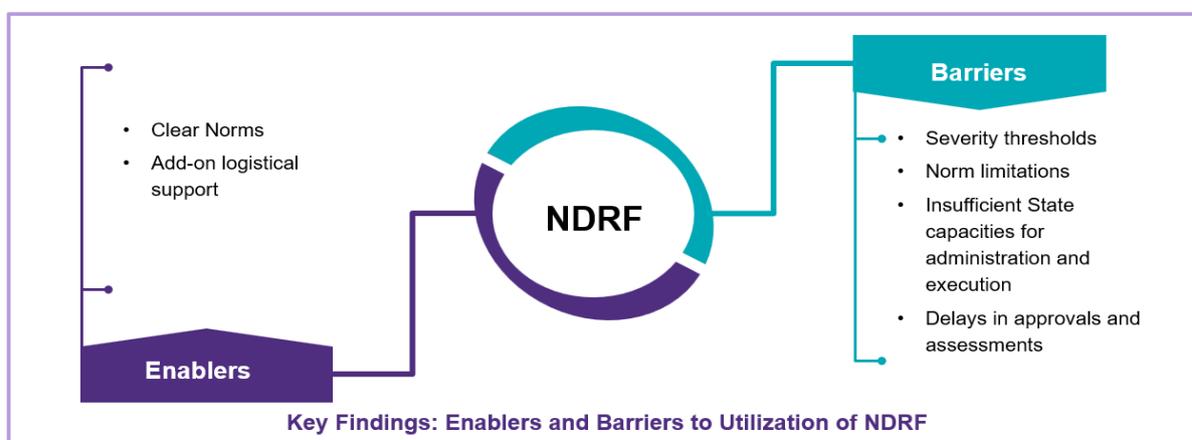


Figure 13: Key Findings- Enablers and Barriers to utilization of NDRF

The **key enablers** to NDRF utilization are described below.

- **Clear norms:** Detailed norms for eligible relief expenditures have standardized the nature of expenditures which NDRF can cover. This clarity helps States to utilize funds on approved items without ambiguity, and also to plan and budget accurately for relief and response measures.
- **Add-on logistical support:** The Centre often complements NDRF financial aid with in-kind and logistic support from the National Disaster Response Reserve (NDRR) including mobilizing essential resources viz., deployment of aircraft/ helicopters and boats/ BAUTS. Specialist teams of Armed Forces and requisite teams of National Disaster Response Force (NDRF), provision of relief materials & essential commodities, including medical stores, restoration of critical infrastructure and facilities including communication network and such other assistance as may be required by the affected States to meet the situation effectively.

The **key barriers** to NDRF utilization are described below.

- **Severity thresholds:** NDRF can be accessed only for 'calamity of severe nature' as per guidelines. Some moderately severe disasters just below the severity threshold might not

get NDRF approval, forcing States to stretch SDRF. This ambiguity may sometimes discourage States from even applying for NDRF, as they believe that the chances are low for the disaster event to be classified as 'severe' by the Centre.

- **Norm limitations:** The list of eligible items and ceilings are restrictive, and the experiences vary across States. For instance, restoration of long-term infrastructure or compensation for economic losses are not covered, which sometimes leads to unmet needs. Also, in the case of local roads and power lines, only limited relief measures for temporary repairs for restoring connectivity and facilitating relief operations can be supported through NDRF. This causes under-utilization of relief potential – funds can only be spent on the limited eligible categories. The norms were revised in FY 24 (July 2023) to update unit costs and include new perils, which partly alleviated this.
- **Insufficient State capacities for administration and execution:** In some large operations, States face administrative capacity limits in identifying beneficiaries, disbursing cash relief, and accounting for expenditures. This can slow the utilization of NDRF money – funds might be sanctioned but takes time to fully trickle down to disaster affected population.
- **Delays in approvals and assessments:** States often need immediate funds for relief. Waiting for an IMCT visit and subsequent SC-NEC and HLC approvals means that State is initially dependent on only the SDRF for relief. In fast-onset events like flash floods, by the time NDRF aid is released, the emergency phase may have passed.

Impact of Utilization of NDRF

A review of the utilization of funds indicates the following potential areas of impact:

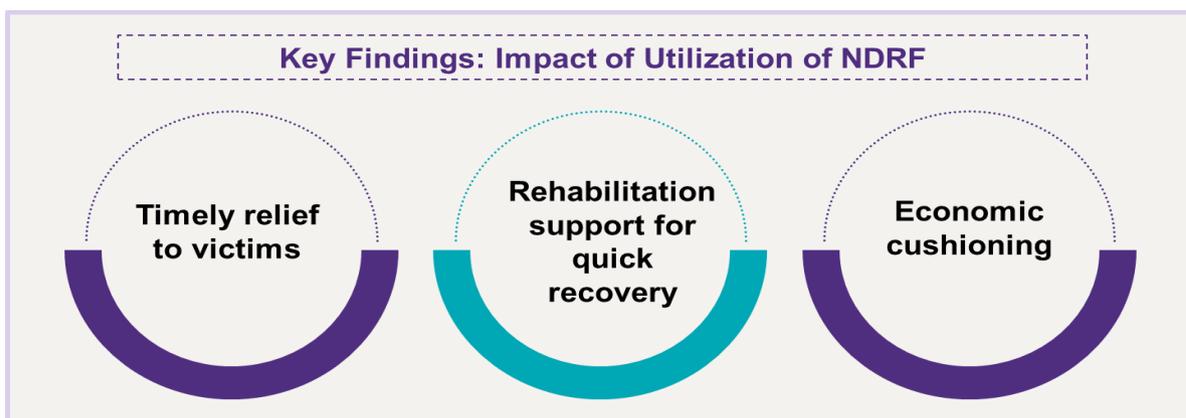


Figure 14: Key Findings- Impact of Utilization of NDRF

- **Timely relief to victims:** In events like the 2020 cyclones, 2021 floods, 2022–24 landslides and floods, NDRF funds enabled States to provide relief – food packets, water, medicines, emergency, shelter materials – to affected communities, reducing suffering in the aftermath of the disasters.

- **Rehabilitation support for quick recovery:** NDRF has financed repair of homes and critical community infrastructure post-disaster. While not covering full reconstruction, it provides a crucial first layer of financial support for recovery. During Bihar’s floods and Assam’s floods of 2020–22, NDRF was used to repair embankments and roads for connectivity and to give livelihood grants, aiding quicker recovery for communities.
- **Economic cushioning:** Though “relief, not compensation,” in practice NDRF payouts like crop relief and livestock compensation do partially compensate losses, helping households to recover economically. This creates a positive economic impact on resilience.

2.3 State Disaster Mitigation Fund

The FFC mandated the creation of SDMF in each State to drive risk reduction at the State and local level. This was a paradigm shift – earlier Finance Commissions did not allocate dedicated mitigation funds to States.

For 2021–26, INR 32,030.60 crores were allocated under SDMF across all States. The Centre contributes 75% (90% for special category States) of each State’s SDMF allocation, and States contribute the rest, identical to SDRF contribution pattern. As per the MHA website, all States except Telangana have intimated the setting up of SDMF⁴. The SDMF is meant to fund preventive and preparatory projects within the State – essentially giving States a fund pool for DRR initiatives tailored to address their local risks.

Extent and Nature of Utilization of SDMF

The total SDMF allocation earmarked for the States for the period of 2021-25 was INR 24984.6 crores, out of which INR 12620 crores (~50%) have been released to the States, as on 31 March 2025. During 2021-24, INR 7635.9 crores of SDMF was released across 26 States, except Jharkhand and Telangana, and 57% of this release was utilized.

The SDMF utilization as a percentage of allocation in FY22, FY23 and FY24 is provided below:

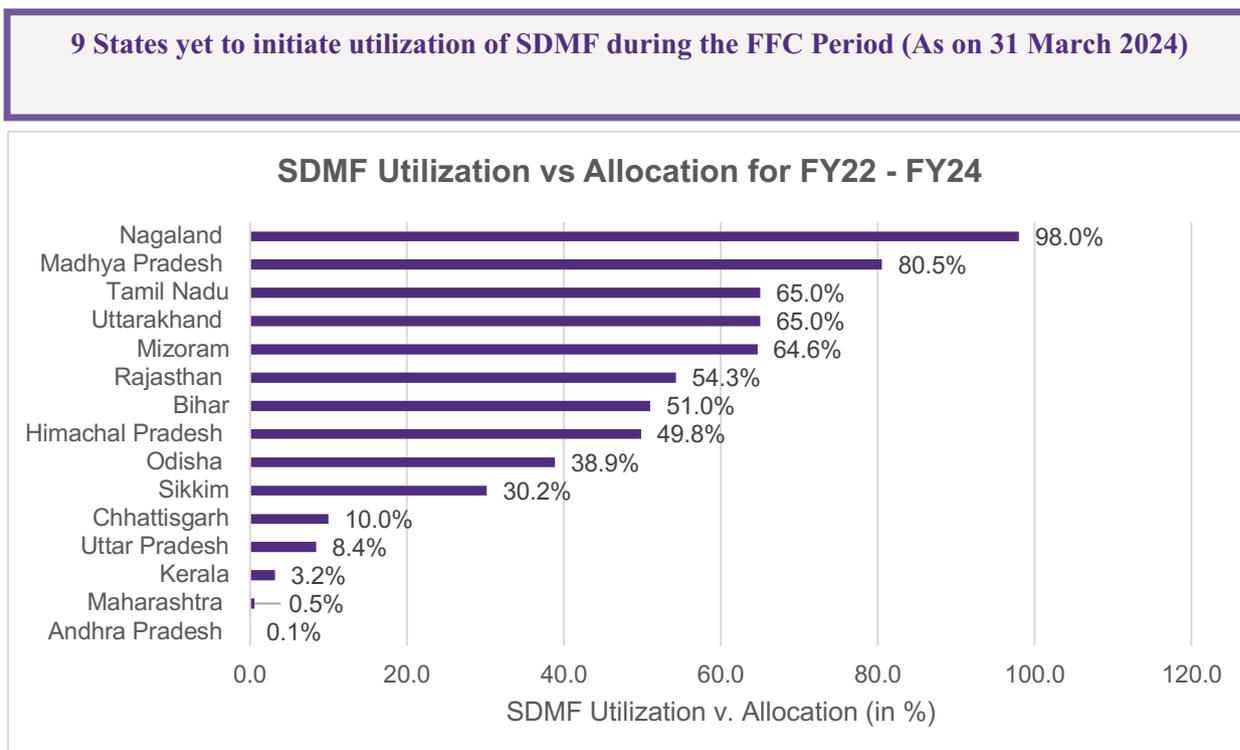


Figure 15: State wise SDMF Utilization% for FY22 to FY24⁵

⁴ <https://ndmindia.mha.gov.in/ndmi/responsefund>

⁵ The CAG Audit reports for FY24 are not available for Assam and Manipur.

The findings on the extent and nature of utilization of SDMF are summarized below:

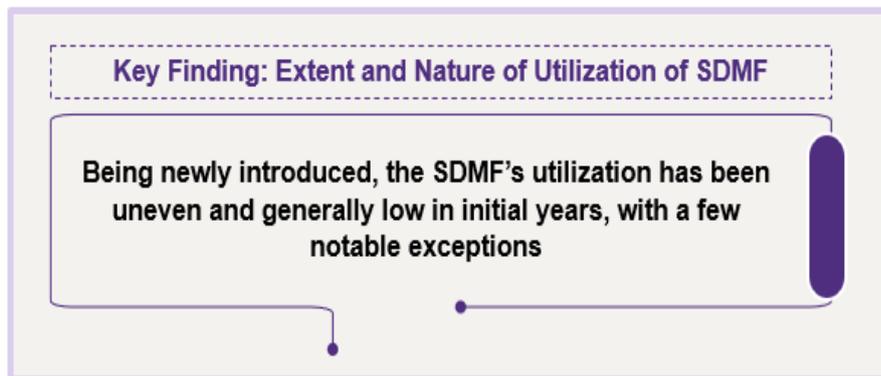


Figure 16: Key Findings- Extent and Nature of Utilization of SDMF

1. Being newly introduced, the SDMF's utilization has been uneven and generally low in the initial years, with a few notable exceptions: -

- **Most States set up SDMF accounts in 2021 or in early 2022** after MHA issued guidelines in January 2022. Initial contributions were transferred; for example - Assam's SDMF had a INR 171.6 crores allocation in 2021-22, however this was received only in 2022-2023.

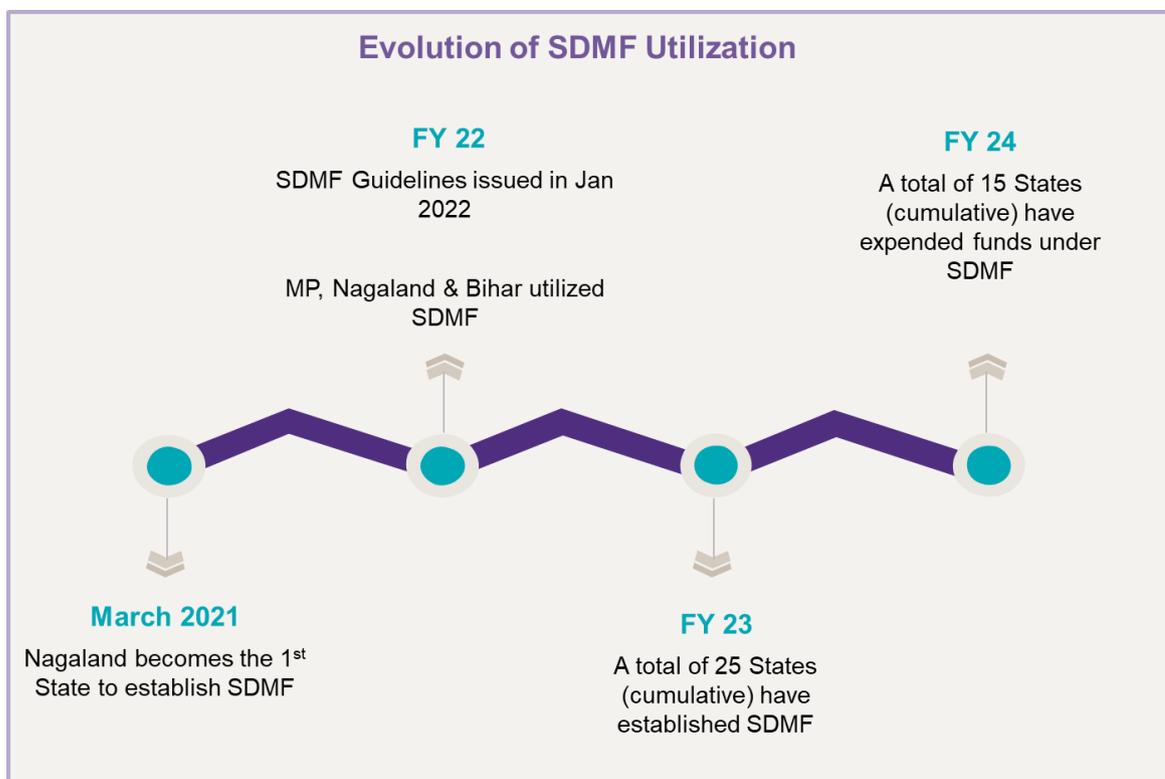


Figure 17: Evolution of SDMF Utilization

- **In FY 22, SDMF remained almost entirely unutilized nationwide, with balances accumulating. This indicated that States were still identifying projects and/or awaiting clear guidelines.** According to CAG audits, no State undertook significant spending from SDMF in the first year of 2021-22. Many simply carried forward the balance. For example, Chhattisgarh had INR 58.06 crores (both Central and State funded) in SDMF by FY 22 but utilization is zero in that year. Andhra Pradesh had INR 298 crores SDMF allocation, but utilization is zero in 2021-22. Similarly, Kerala also did not utilize SDMF funds in 2021-22 despite getting an allocation of INR 83.8 crores. Available data suggest that only 3 States – Nagaland, Madhya Pradesh and Bihar – have achieved utilization of SDMF in FY 22.
- **In FY 23, a few States began using SDMF funds, though usage was highly skewed.**
 - Madhya Pradesh emerged as a leader in SDMF – it spent INR 488.17 crores (95.79% of allocated amount), among the highest across all States. MP focused on projects like water conservation, drought resilience, flood discharge management and water supply. Notable projects include a) installation of drainage gates at Halali dam, benefiting farmers in inundated areas b) improvement of State tanks and canals across various districts to conserve water for drought relief c) enhancement of the Seep Kolar link to supply drinking water to Bhopal and d) flood discharge management at Mohanpura dam to prevent downstream erosion. While MP is a front runner achiever in SDMF utilization for flood and drought mitigation, its NDMF utilization for drought resilience is zero. MP's proactive use suggests early planning; the State identified mitigation works and executed them quickly.
 - On the other hand, Nagaland, which achieved around 100% utilization of allocated SDMF in FY 22, has zero utilization in FY 23.
 - Assam had zero utilization from SDMF in FY 22 and FY 23, against the allocation of INR 171 crores in FY 22 and INR 180.2 crores in FY 23. Assam incurred an expenditure of INR 1.6 crores against INR 189.2 crores in FY 24. However, the uptake of funds in SDMF is expected to pick up as the SDMF Appraisal Committee of the State has approved 155 proposals worth INR 413 crores, of which 66 proposals amounting to INR 195 crores have secured approvals of the SEC.
 - Majority of the other States continued to show near-zero SDMF spending in FY 23. Kerala spent only INR 0.07 crores on a pilot project in FY 23 and INR 8.3 crores in FY 24, despite significant mitigation needs after the floods and landslides. Andhra Pradesh could expend only INR 0.375 crores in FY 23 and INR 0.16 crores in FY 24. Many NE States as well as smaller States like Goa did not report any utilization in FY 23.
- **In FY 24, SDMF utilization has significantly increased, reflecting higher levels of States capacities to design and implement mitigation interventions on ground**

In FY 24, around INR 2437 crores have been expended under SDMF. This is approximately 63% higher than the mitigation expenditures across all States in FY 23. However, only 13 states have utilized SDMF in FY 24, only a slight increase from the 10 states in FY 23.

Implementation and Institutional Mechanisms of SDMF

At the State level, the SDMF is administered similarly to SDRF, but with a focus on mitigation project execution rather than emergency relief. States were advised by MHA in early 2021 to formulate rules/guidelines for SDMF administration, and guidelines were circulated by MHA in January 2022.

The findings on implementation and institutional mechanisms of SDMF are summarized below:

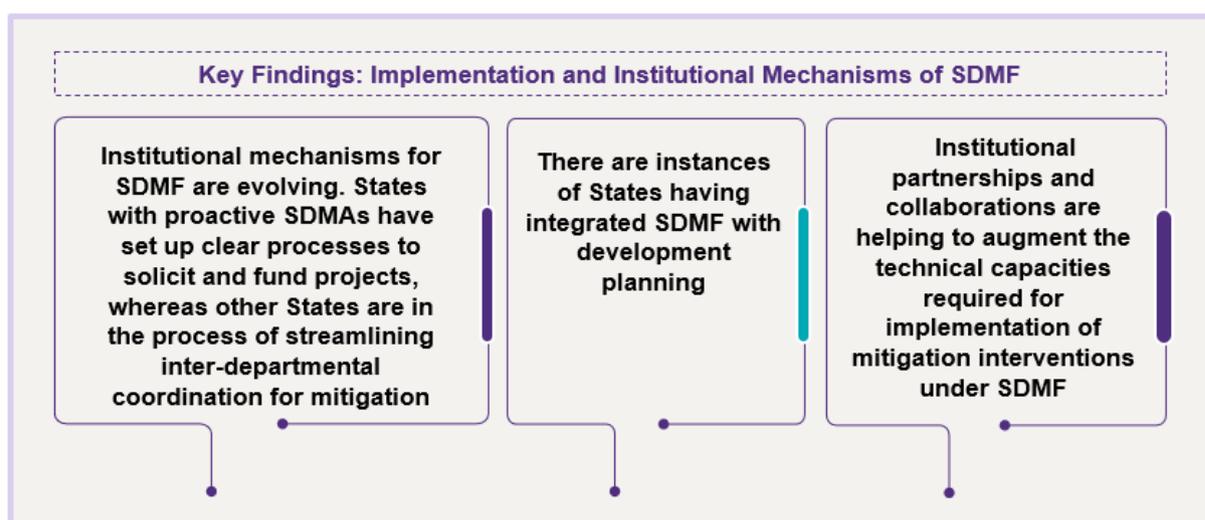


Figure 18: Key Findings: Implementation and institutional mechanisms of SDMF

- 1. Institutional mechanisms for SDMF are evolving. States with proactive SDMAs have set up clear processes to solicit and fund projects, whereas other States are in the process of streamlining inter-departmental coordination for mitigation.**
 - Lack of active participation from line Departments has been identified as a bottleneck in SDMF utilization.** Gujarat and Kerala have cited limited participation from line Departments as a challenge in identification of mitigation projects and developing project proposals. Workshops have been conducted at the State-level in Gujarat, Odisha and Kerala to enhance the awareness of Department officials and orient them towards proposal preparation and documentation.

- As adopters of the prescribed institutional processes, some States have formed designated Committees to manage the SDMF:** Majority of the States have designated the existing SEC to also vet SDMF projects. Assam has constituted a Technical Advisory Committee to guide SDMF project selection, headed by the Secretary- Revenue and Disaster Management, with representatives from key departments such as Water Resources; Public Works Department; Public Health Engineering; Irrigation; Soil Conservation; Health & Family Welfare; Power; Agriculture; Forest; Animal Husbandry & Veterinary; Panchayat Raj & Rural Development; Education; Urban Development; Social welfare and Industries & Commerce. In Tamil Nadu, the Tamil Nadu Disaster Risk Reduction Agency (TNDRRA) has been established to coordinate all the State / Centrally Sponsored / Externally aided projects implemented for DRR including Mitigation. The Executive Council of the TNDRRA is chaired by the Commissioner of Revenue Administration or State Relief Commissioner and the Director, Disaster Management acts as the Chief Executive Officer or Member Secretary. The Uttarakhand SDMA has a dedicated Disaster Mitigation & Management Center (DMMC) active since 2006, which functions as a technical arm, conducting studies and pilot projects. DMMC collaborates with scientific and academic institutions to share new technologies through workshops.
 - Monitoring of SDMF projects is largely input-focused rather than outcome-focused.** Like SDRF, funds and activities are monitored; however, outcomes are not monitored. Gujarat employs GIS mapping and dashboards to monitor the progress of infrastructure restoration. Gujarat plans to monitor SDMF projects through its project management unit, with quarterly progress reports and outcome indicators. Cross-cutting oversight is provided by the SDMA which meets periodically to review not just response readiness but also mitigation initiatives.
- There are instances of States having integrated SDMF with development planning.** Madhya Pradesh linked SDMF projects to its watershed program for drought mitigation, ensuring technical support from the Agriculture Department. The SDMF funds have also been utilized for flood mitigation in MP. The Water Resources Department and Narmada Valley Development Authority work towards the improvement of local storm-water drainage, construction of small levees, embankments, and culverts, and improving percolation tanks and water bodies, with support from the SDMF, thus integrating flood mitigation efforts into development planning. Kerala has made efforts to ensure that proposals under SDMF should also feature in the State's Annual Plan, if possible, to synchronize efforts. Some States created dedicated cells or Nodal Officers in each Department for disaster mitigation to generate proposals and oversee implementation.
 - Institutional partnerships and collaborations are helping to augment the technical capacities required for the implementation of mitigation interventions under SDMF.** Uttarakhand's policy framework includes a Roadmap for Disaster Resilience developed after 2013, which many of the SDMF projects draw from, for example, landslide

zonation and treatment, which is now funded via SDMF in some critical sites. However, Uttarakhand faces constraints; terrain and remoteness make implementation difficult, and capacity at the district level varies. Some districts like Nainital and Chamoli have experienced officers adept at handling funds, whereas others have gaps. To support this, the State has sought help from Central agencies – for instance, the Geological Survey of India and Wadia Institute of Himalayan Geology were roped in to design slope stabilization projects. Moreover, Uttarakhand’s SDMA has engaged local universities in monitoring projects, building a knowledge network. Another example is Kerala, wherein the KSDMA is collaborating with the Center for Water Resources Development and Management (CWRDM) to develop early flood warning systems for five rivers; INR 1.42 crores have been sanctioned under SDMF for this. In Assam, knowledge institutions like CSIR- North East Institute Of Science And Technology (NEIST) , and North East Space Application Center are engaged for the vetting of DPRs under SDMF.

Enablers and Barriers to Utilization of SDMF

SDMF utilization faced challenges related to commencing a new fund, no prior templates, low awareness levels, technical and coordination hurdles. But as the frameworks improved and a few successful implementation cases have emerged from a few States especially Madhya Pradesh, these barriers have been gradually lowering.

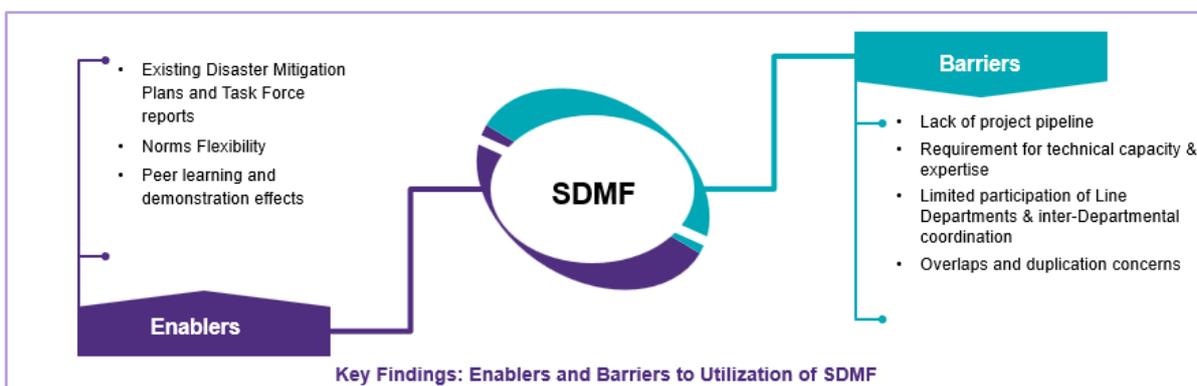


Figure 19: Key Finding: Enablers and Barriers to Utilization of SDMF

The **key enablers** to SDMF utilization are described below.

- **Existing Disaster Mitigation Plans and Task Force reports** - SDMF empowers States to address specific vulnerabilities that might be overlooked nationally. In the case of States such as Meghalaya, Kerala, Maharashtra, Bihar, Tamil Nadu, Telangana, Madhya Pradesh, Uttarakhand, Assam, and Himachal Pradesh where the Disaster Mitigation Plans and Strategies formed a part of the State Disaster Management Plans, SDMF gave a means to implement those recommendations. For example, Himachal Pradesh had a Landslide Risk Mitigation Action Plan; once SDMF was enabled, the State could fund landslide protection projects, turning plans into action. The key measures proposed under this include Structural and Non-structural measures to protect roads, buildings and other vital

installations. These measures are being implemented through the SDMF in the State after being approved by the Project Appraisal Committee including Landslide mitigation measures such as bioengineering, construction of flexible and rigid protection walls, use of erosion mats, etc.

- **Norms Flexibility:** Unlike SDRF which has rigid norms, SDMF guidelines are broader – projects that demonstrably reduces disaster risk are allowable. This flexibility is an enabler because States can tailor solutions creatively.

The SDMF guidelines facilitates provision of resources to a wide range of activities aimed at overall Disaster Risk Reduction including project that promote disaster mitigation in local context; protect assets, eco-systems, and settlements of significance to the State; promote practices to reduce disaster risks and its impacts; build community resilience through information and knowledge; provide grants for research and studies related to disaster mitigation, etc.

- **Peer learning and demonstration effects:** As a few States started using SDMF successfully, other States were encouraged to assess the best practices and potential of customized implementation. The MHA organized a Regional SDMA Conclave 2022 on Mitigation Funds, where early success stories were showcased.
- **State ownership and institutional capacities:** Due to State contribution requirements and the significantly large pool of mitigation funds available, States began to view mitigation as part of their responsibility and not just the Centre's responsibility. States were encouraged to prioritize projects that yield long-term benefits for their own people, leveraging central support.

The **key barriers** to SDMF utilization are described below.

- **Lack of prepared projects or project pipeline:** Initially, most States did not have a 'ready-for-action' mitigation project or mitigation proposal prepared. Disaster mitigation requires planning and technical design which many SDMAs and Line Departments had not earlier done.
- **Requirement for technical capacity and expertise:** Designing effective mitigation measures – for example, a seismic retrofitting project or early warning system - needs expertise, which not all States have. This has slowed down the utilization of SDMF. Smaller States like Nagaland and Meghalaya faced capacity constraints, as they did not have readily available technical institutions or consultants to design projects and provide cost-benefit analyses as required. Also, procurement and execution of mitigation works can be a challenge, if the State does not have the required skillsets and/or prior experience.
- **Limited participation of Line Departments and limited inter-Departmental coordination:** Lack of active participation of line Departments and delayed preparation of mitigation proposals by the Departments are major challenges. Thus, funds lay unused

because mitigation projects were not identified and/or prepared. Mitigation projects often cut across Departments. Multi-sector mitigation projects get stalled because a department would hesitate to anchor projects which involved other Departments also.

- **Overlaps and duplication concerns:** States had to ensure SDMF projects did not duplicate funding from other schemes like Smart Cities, Climate Action Plan, etc. The effort to coordinate funding sources created some delays. In Kerala, flood mitigation interventions are already part of the WRD's projects, hence the inclusion of separate projects under SDMF had to be addressed.

Impact of Utilization of SDMF

The impact of SDMF is uneven and varied. In States that are yet to significantly use SDMF, the potential benefits are unrealized. The overall national impact created by SDMF by 2025 is still modest – only a fraction of the INR 32,000 crores has translated to completed projects so far. The real payoff of SDMF will come when utilization broadens and deepens in the next few years. If States fail to ramp up, the impact will remain localized to proactive States.

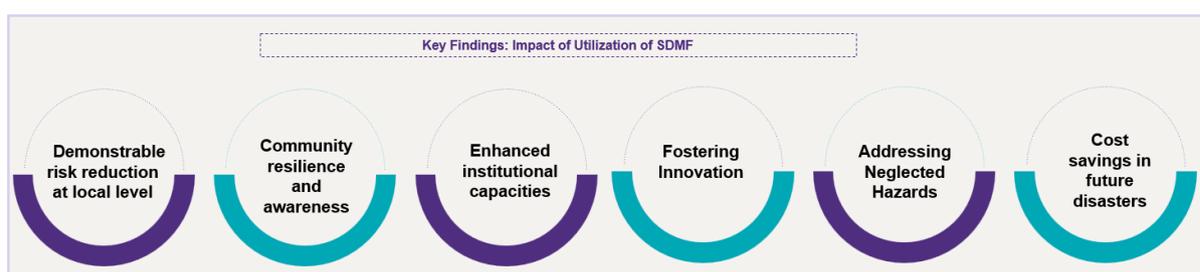


Figure 20: Key Findings- Impact of Utilization of SDMF

- **Demonstrable risk reduction at the local level:** Projects executed through SDMF have shown tangible DRR benefits. Madhya Pradesh's mitigation initiatives have benefited the region through several key projects, such as the Seep Kolar Link Enhancement, which brings water to Kolar and ensures a reliable supply of drinking water for Bhopal, and the Flood Discharge Management from Mohanpura Dam, which helps prevent erosion downstream and protects the surrounding areas. These localized impacts directly contribute to safeguarding livelihoods and property.
- **Community resilience and awareness:** Many SDMF projects involve community capacity building – training of village disaster volunteers, drills, establishing Local Response Teams, public awareness campaigns like Odisha's lightning safety awareness or Tamil Nadu's cyclone preparedness training for coastal communities. These are aimed at a better prepared populace that reacts appropriately to warnings, thus reducing casualties. Such capacity-building, though hard to measure, has life-saving potential. For example, more people move to cyclone shelters after awareness campaigns, leading to near-zero cyclone deaths in those areas.

- **Enhanced institutional capacities:** Implementing SDMF projects has the potential to strengthen institutions. If these funds enable departments like Irrigation, Public Works, Agriculture, etc., to integrate DRR considerations into their regular work, over time, state agencies may gain experience in developing risk informed projects, if the enabling environment for this to happen is put in place.
- **Fostering Innovation:** Under SDMF, States are free to pilot innovative solutions. Some impacts may come from these pilots being scaled up. Kerala's micro-level landslide mapping and community-based landslide early warning project (started small under SDMF) could drastically reduce landslide risk if expanded across Western Ghats.

To summarize, SDMF has initiated a preventive mindset in State governance. The full impact in reducing disaster risk will become more visible as more projects come to fruition and as States learn from each other to maximize the use of this fund

2.4 National Disaster Mitigation Fund

Extent and Nature of Utilization of NDMF

In the early years during 2021-24, the utilization of NDMF was zero as it was new and the frameworks were being set and projects being identified. By 2024-25, the pace picked up, and a number of major mitigation projects received approval under NDMF.

The findings on extent and nature of utilization of NDMF are summarized below:

- Only 12.09% of the total NDMF allocation of INR 5950 crores was released as on 31 March 2025
- **NDMF for reducing the risk of Urban Flooding:** All beneficiary States have accessed the funding. Only 28.3% of the 2500 crores allocated have been released as on 31 March 2025. The first phase of the Ahmedabad Municipal Corporation's Project under this sub-window is under implementation with an outlay of ~INR 73 crores in the first phase and an overall outlay of ~INR 275 crores. In Tamil Nadu, NDMF was utilized for the preparation of Comprehensive Flood Control Master Plan has been jointly taken up by the NDMA and TNSDMA, with technical cooperation from JICA. The first phase of the project has an outlay of roughly INR 150 crores and the overall outlay is roughly INR 561 crores. INR 114 crores was released under the NDMF in FY25.
- **NDMF for mitigation measures to prevent erosion:** Only 2 states have accessed funds for mitigating the impact of GLOF.
- There has been zero fund release under earmarked allocations for **Catalytic Assistance for Drought-prone States and managing seismic & landslide risk** till this study was being conducted in March 2025.

- A mitigation project focused on **lightning safety** was approved for 10 States in January 2025 with a total outlay of Rs 186.78 crore. The States covered are Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Meghalaya, Odisha, Uttar Pradesh and West Bengal.
- A scheme for **forest fire risk management**, targeting 144 high-priority districts across 19 States, was approved in January 2025 with a total outlay of Rs 818.92 crore.

In summary, the NDMF's utilization trajectory went from nearly zero in 2021 to a series of project sanctions by 2024–25. The nature of utilization is project-based funding aimed at long-term risk reduction – a fundamental shift from the reactive spending of NDRF/SDRF.

Enablers and Barriers to Utilization of NDMF

Many of the early hurdles like lack of proposals and guideline delays have been overcome, and NDMF utilization is on the increase. Continued capacity building – NDMA guiding States on proposal preparation, peer learning between States – will help facilitate utilization. The findings on the enablers and barriers of NDMF are summarized below:

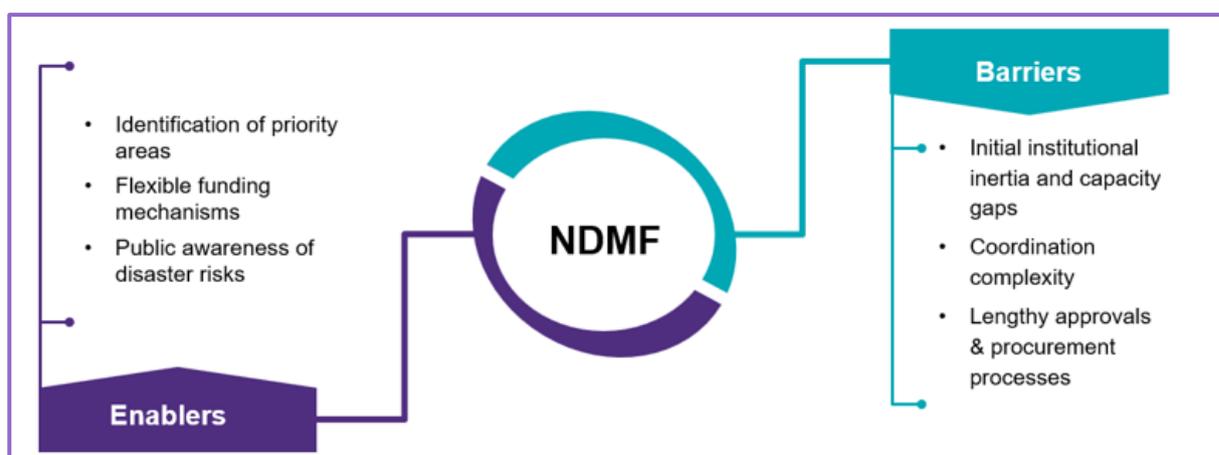


Figure 21: Key Findings- Enablers and Barriers of NDMF

The **key enablers** to NDMF utilization are described below.

- **Identification of priority areas:** The FFC had pre-identified key areas and earmarked sums. This provided a blueprint that guided NDMA and ministries to develop concrete project proposals.
- **Flexible funding mechanism:** NDMF being 90% central grant and not requiring reimbursement or loans makes it very accessible. Unlike external donor projects or loans, NDMF projects do not burden State finances, which is a strong incentive to utilize. Also, funds can be released in a phased manner without yearly lapse, giving implementing States time to complete multi-year works.

- **Public awareness of disaster risks:** Growing public concern about recurring disasters has built pressure to invest in mitigation. This acts as an enabler for utilization – there is demand for solutions like flood control in cities or lightning safety in villages. When NDMF offers a funding window for these, there is readiness at ground level to accept and participate. For example, communities readily participate in Aapda Mitra training funded under capacity-building.

The **key barriers** to NDMF utilization are described below

- **Initial institutional inertia and capacity gaps:** At inception, there was limited capacity on how to operationalize NDMF. Neither States nor Central agencies had prior experience of preparing dedicated mitigation project proposals for this fund. This led to delays; guidelines took a year to issue, and even then, States were slow to propose projects. Bridging the gap between broad FC recommendations and actionable projects took time, indicating a capacity barrier in project development and inter-agency coordination.
- **Coordination complexity:** NDMF projects often cut across administrative boundaries and sectors. Coordinating 10–15 States for a single project is challenging. Differences in State priorities, bureaucratic hurdles in signing MoUs, and aligning funding timelines can slow down execution.
- **Lengthy approvals & procurement processes:** Mitigation projects involve large contracts for construction of infrastructure, procurement of equipment, and technical consultancies. Government procurement processes can be slow which delays actual fund utilization even after project sanction.

Impact of Utilization of NDMF

As NDMF projects are in early stages, immediate tangible impacts are just beginning to emerge. The following are intended and potential impacts.

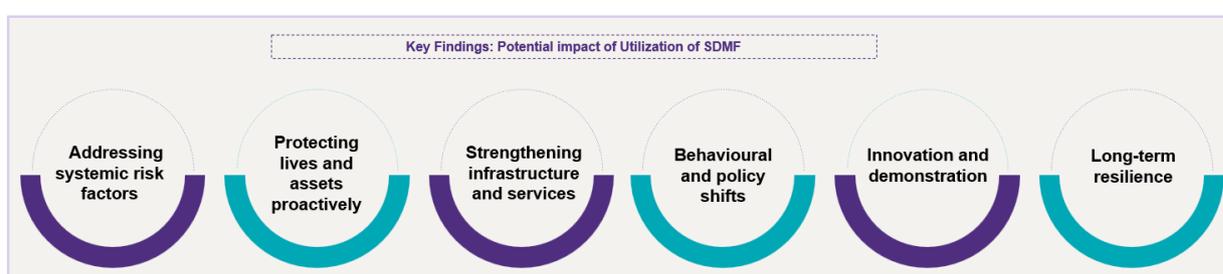


Figure 22: Key Findings- Impact of Utilization of NDMF

- **Addressing systemic risk factors:** NDMF-funded initiatives target underlying risk drivers that previously went unaddressed. For example, the lightning mitigation project will deploy lightning detection and warning systems in vulnerable districts and conduct community awareness.

- **Protecting lives and assets proactively:** Projects like urban flood mitigation in big cities will have huge payoffs in future disasters – better drainage and early warning can prevent urban flooding or at least mitigate its damage. The result would be less economic losses, and less disruption in those cities during heavy rains. Similarly, the GLOF risk reduction project in Uttarakhand, Sikkim, etc., by installing sensor systems at glacial lakes, can provide warnings that enable timely evacuations, potentially saving hundreds of lives that would be lost in sudden glacial lake floods. Thus, while these projects may have limited ‘visibility’ now, their impact will be measured in disasters averted or mitigated in coming years; these are very real outcomes.
- **Strengthening infrastructure and services:** A lot of NDMF investment goes into strengthening critical infrastructure, including Urban Flood Risk Mitigation and GLOF Risk Mitigation. These initiatives mean that when hazards strike, infrastructure is less likely to fail. Modern fire brigades which are funded through mitigation windows will improve response to urban fires, saving property and lives.
- **Behavioral and policy shifts:** The process of implementing NDMF projects has itself raised awareness and priority of mitigation in government agencies. Many States such as Meghalaya, Kerala, Maharashtra and Himachal Pradesh have now prepared Disaster Mitigation Plans as part of their State Disaster Management Plans and started hazard mapping exercises are at varying stages.
- **Innovation and demonstration:** NDMF allows trying innovative solutions at scale, which can then be replicated. The forest fire management program will pilot advanced technologies - drones, satellite-based fire alerts - in 144 districts. The learnings can feed into national policy on forest fires and climate adaptation.
- **Long-term resilience:** Ultimately, NDMF utilization, if sustained, will contribute to bend the curve of disaster losses in India. The Sendai Framework monitoring should capture improvements: reduced mortality, reduced number of affected people, reduced economic loss as a percentage of GDP, and reduced infrastructure damage – all key metrics.

In summary, while NDMF is nascent, its funded projects have the potential to save lives, protect critical infrastructure, and reduce the need for relief expenditures in the future by neutralizing hazards before they cause devastation.

2.5. Experiences of Deep Dive States: An Overview

The table below provides an overview of the State experiences on utilization of FFC allocations.

State	Key Highlights
Assam	While SDRF is used for flood relief, large unspent balances and delays in fund utilization were observed. In 2022–23, Assam accessed NDRF for severe floods but still did not exhaust available resources. Spending appears to be reactive, focused on relief rather than mitigation, with minimal investment in resilience projects. Reconstruction efforts include repairing infrastructure, but mitigation remains largely unimplemented as on date. Despite compliance with fund guidelines, procedural delays and limited district-level capacity hinder effectiveness.
Gujarat	Gujarat’s disaster fund use was driven by Cyclone Tauktae in FY22, with rapid SDRF deployment for relief and infrastructure restoration. In years of lesser disaster incidence, fund utilization dropped. Though Gujarat allocated INR 538 crores to SDMF in FY23, none was spent by 2023, reflecting delayed mitigation action. Strong institutional capacities support response capabilities, but mitigation projects lag due to prioritization and administrative delays. Gujarat uses advanced monitoring tools and transparent financial systems, ensuring effective NDRF use. Planned SDMF projects focus on urban resilience and early warning systems. With updated policies and institutional strength, Gujarat is expected to improve mitigation fund utilization in FY25–26.
Kerala	Kerala, hit by major floods in 2018–19, used SDRF and over INR 2,000 crores from NDRF for relief. In the FFC cycle, spending focused on localized floods and landslides. Kerala’s strong disaster response is supported by decentralized governance. Mitigation efforts relied on the Rebuild Kerala Initiative (RKI), with minimal early SDMF use due to overlapping mandates and delayed proposals. Recently, SDMF is being used for slope stabilization and early warning systems.
Madhya Pradesh	Madhya Pradesh exemplifies proactive disaster fund use, aligning closely with the FFC’s goals. It utilized nearly all SDRF funds in 2021–22 for floods and droughts, and 97% of SDMF by 2024 for mitigation projects like stormwater drains, embankments, and early warning systems. MP balanced relief, recovery, and mitigation spending, following the 40-30-20 guideline. Strong governance, technical capacity, and partnerships enabled timely project execution. Innovative programs like “Drill for Resilience” and climate-integrated planning further enhanced effectiveness.
Meghalaya	Meghalaya, prone to landslides, flash floods, and lightning, receives 90% central funding for SDRF and SDMF due to its special category status. Despite annual allocations, SDRF usage is moderate, with frequent unspent balances due to localized disasters. SDMF utilization was initially nil. With support from NDMA and NEC, Meghalaya began

	identifying mitigation projects in 2023, including slope protection and lightning warning systems.
Odisha	Odisha, highly vulnerable to cyclones, floods, and heatwaves, has excelled in disaster response, notably achieving near-zero cyclone deaths through mass evacuations and robust planning. SDRF and NDRF funds support relief efforts, while SDMF is actively used for mitigation across all districts. Odisha's strong institutional capacities and political commitment enabled quick approvals for shelters, embankments, and lightning safety initiatives. Despite resource gaps, the State leverages budgetary and donor support for large-scale projects.
Uttarakhand	Uttarakhand, prone to flash floods, landslides, and glacial lake risks, extensively used its SDRF for frequent small disasters, spending its full allocation in 2022–23. Though SDMF spending was initially delayed, by 2024, the State had utilized about half for mitigation, including landslide protection and early warning systems. Reconstruction projects like relocating vulnerable villages are underway, supported by SDRF and other schemes. Public demand and terrain challenges drive the need for mitigation. Technical capacity and co-funding from national programs are helping scale efforts.

Table 5: State experiences on utilization of FFC allocations

The in-depth case studies on the Deep Dive States are provided in Annexure 3.

Chapter 3: Examining the Principles of Distribution of Disaster Management Funds

The new DRI-based approach envisaged making disaster funding more transparent and risk-informed. By incorporating quantitative measures of hazard exposure and vulnerability for each State, the DRI-based model sought to ensure that allocations for States reflect their underlying disaster risk profiles rather than just historical spending. The design and methodology of application of the DRI-based formula have been provided in Annexure 1.

The State-wise DRI scores and ranks, and FFC grant allocations are depicted in the table provided below.

State	SDRF Allocation (in INR crores) under the 14 th FC period	DRI Score	DRI Rank	SDRF Allocation (in INR crores) under the 15 th FC period	Allocation-Rank
Odisha	4130	0.9	1	11819	4
Bihar	2591	0.8	2	10432	6
Gujarat	3893	0.8	3	9753	7
Uttar Pradesh	3729	0.75	4	14246	2
West Bengal	2854	0.75	5	7450	10
Assam	2541	0.7	7	4742	13
Maharashtra	8196	0.7	8	23737	1
Andhra Pradesh	2429	0.65	9	8239	8
Jharkhand	2010	0.6	10	4182	14
Karnataka	1528	0.6	11	5824	11
Madhya Pradesh	4848	0.6	12	13411	3
Manipur	106	0.6	13	260	26
Tripura	171	0.6	14	420	22
Chhattisgarh	1329	0.55	15	3183	18
Kerala	1021	0.55	16	2316	20
Rajasthan	6093	0.55	17	10913	5
Tamil Nadu	3751	0.55	18	7516	9
Mizoram	93	0.5	19	287	25
Nagaland	54	0.5	20	254	27
Uttarakhand	1158	0.5	21	5752	12
Haryana	1699	0.45	22	3619	16
Himachal Pradesh	1304	0.45	23	2508	19
Punjab	2153	0.45	24	3648	15
Telangana	1514	0.45	25	3310	17
Meghalaya	133	0.4	26	403	23
Sikkim	172	0.4	27	310	24
Goa	20	0.35	28	83	28

Table 7: State-wise DRI scores and ranks, and FFC grant allocations

In the following sections, a review of the DRI-based fund allocation model is presented.

The quantitative analysis of the DRI-based fund allocation model covers the following four parameters to examine if numbers indicate that the model is working as intended i.e. reflecting risk and needs, or if there are anomalies:

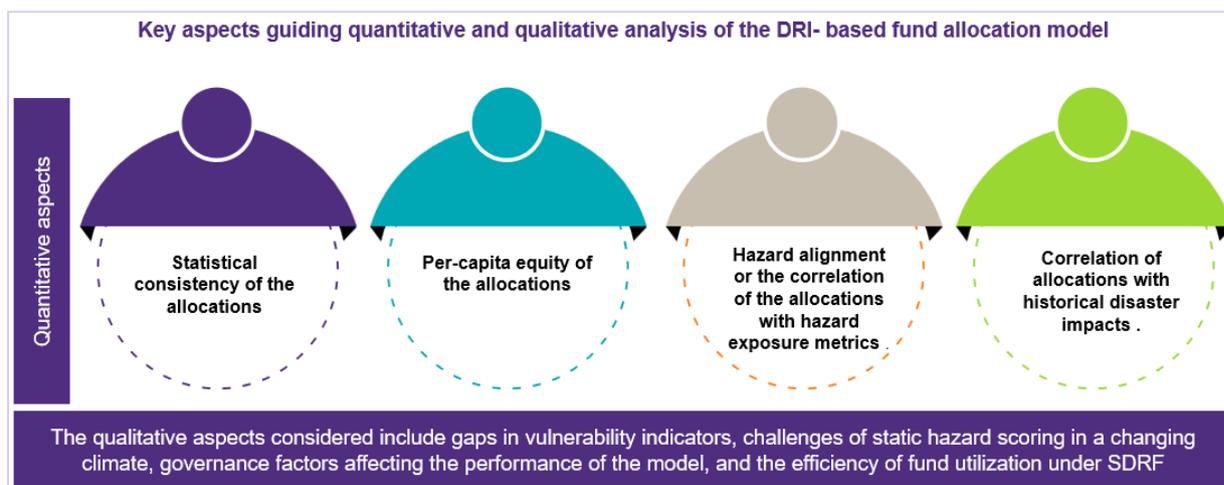


Figure 23: Key aspects guiding quantitative and qualitative analysis of the DRI-based fund allocation model

1. **Statistical consistency of the allocations** – An assessment of whether the outcomes statistically logical and consistent has been undertaken. ‘Consistency’ means, for example, that a State with a higher DRI and similar base factors should end up with a higher allocation than a peer State with lower DRI (all other factors equal).
2. **Per-capita equity of the allocations** - An indication of how much funding is available per resident of each State is important, as this indicates equity and sufficiency of relief resources on a per-person basis.
3. **Hazard alignment or the correlation of the allocations with hazard exposure metrics** – Examining the alignment of the allocations with the actual hazard exposure of States is relevant. One way to test this is to check correlations between the hazard components (flood-prone area, drought-prone area, cyclone coastline, seismic zone population, etc.) and the final allocations.
4. **Correlation of allocations with historical disaster impacts** - Ideally, the new risk-based allocations should correlate with historical disaster impact metrics like economic damage or lives lost. This could validate that high-risk (DRI) States are indeed those that historically suffered more, because that would justify that risk indexing captured reality.

Under qualitative analysis of the DRI-based fund allocation model, this report has examined gaps in vulnerability indicators, challenges of static hazard scoring in a changing climate, governance factors affecting the performance of the model, and the efficiency of fund utilization under SDRF.

The insights from the review of the DRI-based fund allocation model indicate that the model has generally succeeded in its early years at making funding fairer and more needs-oriented. The risk-sensitivity in funding is a step toward equity and efficiency; it recognizes that disasters are fundamentally uneven in their occurrence and impact, and public resources must even out that imbalance by supporting the more exposed and less resilient.

It is suggested that future Finance Commissions and policy makers should build on the Fifteenth Finance Commission's work by refining the risk index, strengthening institutional capacities, and integrating prevention, so that over time the need for large relief expenditures itself diminishes.

Diversity and Contextual Needs of Disaster Risks India: How effective is the DRI-based Fund Allocation Model?

This review of the DRI-based on SDRF allocation model finds that it is a significant improvement over past expenditure-driven approaches, achieving better alignment of funds with state-specific vulnerabilities and hazards. Quantitatively, the formula has redistributed the disaster response resources toward those States that have historically needed them the most, as evidenced by larger allocations to high-risk States like Odisha, Assam, Bihar, etc., and relatively lower shares to States with milder risk profiles. **This risk-sensitivity in funding is a step toward equity and efficiency; it recognizes that disasters are fundamentally uneven in their occurrence and impact, and public resources must even out that imbalance by supporting the more exposed and less resilient.**

The analysis also surfaces some challenges and limitations. **The static nature of the index and the simplicity of the vulnerability measure mean that the model may not fully capture evolving realities or all facets of risk.** For example, in cases like Kerala (where climate risks manifested in an unprecedented form and scale) and in the uniform treatment of certain hazards. Moreover, **the model's success is heavily dependent on what happens after allocations – the governance, timely utilization, and actual risk reduction on the ground.**

Overall, **the DRI-based allocation can be deemed successful in its primary goal - to correct the imbalance of previous funding mechanisms and embed objective risk considerations into fiscal decisions.** States are aware that demonstrating needs and improving action and expenditure on hazards can directly influence their resource envelope, and conversely that failing to address vulnerabilities might increase their relief expenditures and keep them reliant on relief aid. This transparency and rule-based allocation also can also foster a more collaborative Centre-State relationship in managing disasters.

To summarize, **the DRI-based allocation model is a forward-looking, well-founded strategy that aligns with global best practices in disaster risk financing. It has generally succeeded in its early years at making funding fairer and more needs oriented. With continued improvement – namely more nuanced risk assessment and bolstered execution – it can be ensured that** ever rupee in the SDRF and NDRF is deployed where it can save the most lives and livelihoods. The ultimate test of this model will be in the years to come, as we monitor whether States are indeed able to utilize allocated funds to mitigate their disaster impacts and whether overall national resilience improves.

3.1 State Vulnerabilities and Fund Distribution

The review findings are presented in detail below: -

1. **Overall, the distribution of funds under the DRI-based formula appears statistically coherent; larger States get more in absolute terms, but riskier States get proportionally more than they would have under previous models**

There are no obvious outliers where a very high-risk State ended up with a significantly low allocation or vice versa. The consistency checks shows that the model allocates resource in a fairly balanced way and no State with a glaring risk profile is left far behind in relative allocations.

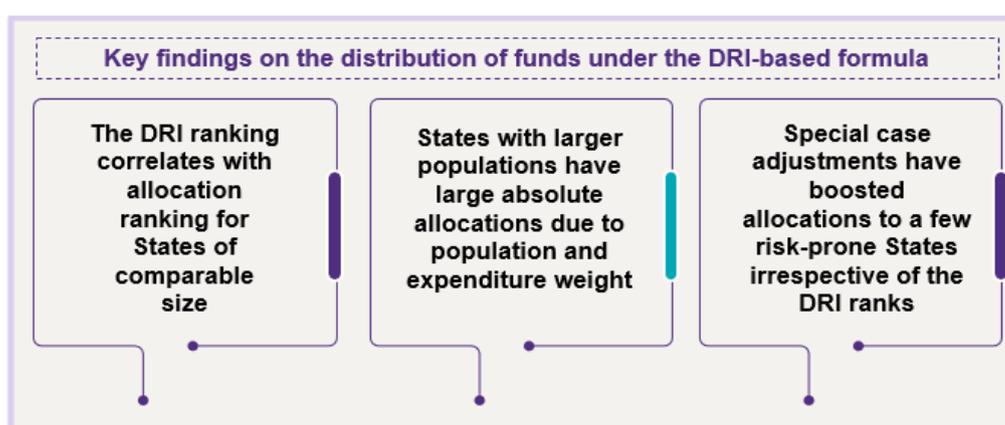


Figure 24: Key findings on the distribution of funds under the DRI-based formula

- **The DRI ranking correlates with allocation ranking for States of comparable size.** In general, high-DRI States like Bihar, Assam, Uttarakhand, etc. have noticeably larger allocations than they would have under a population-based or expenditure-based formula; Bihar, Assam and Uttarakhand have 302%, 87%, and 397% higher allocations under FFC grants when compared to 14th FC Lower-DRI States (majority are smaller or less hazard-prone) have relatively modest allocations.
- **States with larger populations have large absolute allocations due to population and expenditure weight.** For example, Maharashtra with a population of 112.37 million and a moderate DRI score of 0.7 still received the highest absolute allocation (INR 23,737 crores for 2021–26) which exceeded the allocation of Odisha with a population of 41.97 million and highest DRI score of 0.9. This is attributed to Maharashtra's area, population and past expenditures. On the other hand, when States with similar population sizes are compared, the per-capita allocation is much higher for high-DRI States than low-DRI States. An example is Madhya Pradesh and Tamil Nadu each with a population of approximately 72 million; the allocation is higher for Madhya Pradesh with a DRI score of 0.6 vis-à-vis Tamil Nadu with a DRI score of 0.55.

- **Special case adjustments have boosted allocations to a few risk-prone States irrespective of the DRI ranks:** An additional allocation of 11% was provided for the ten North-Eastern and Himalayan States to pay greater attention to infrastructure resilience in these States in view of continuous disruption of their transport network by flash floods, landslides and other mountain hazards.

2. *The FFC's DRI-based model of fund allocation facilitates more resources per person to those in States where each person is at higher risk or has lesser capabilities to cope with a disaster event. The range of per-capita funds from INR 100 to INR 700 across States is wide, indicating that the FFC's DRI-based model has been successful in prioritizing equity in outcomes (disaster risk reduction) over equal inputs.*

Key findings emerging from this review are documented below:

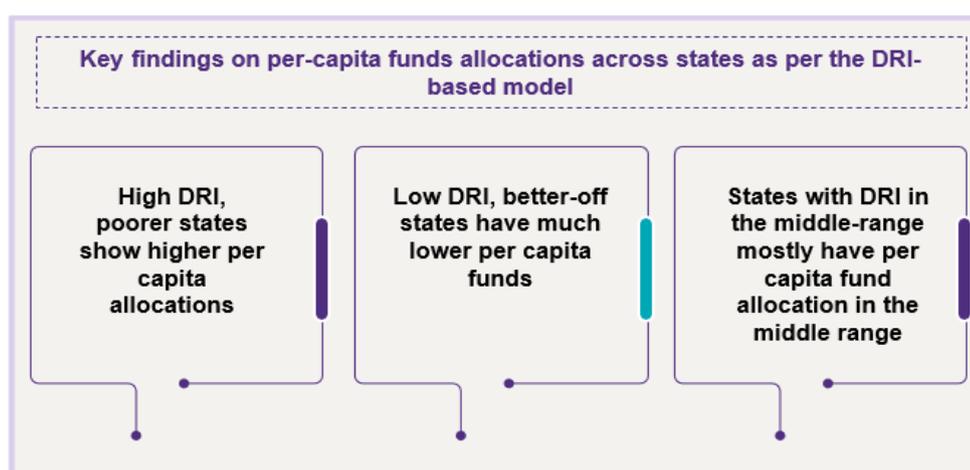


Figure 25: Key findings on per-capita funds allocations across States as per the DRI-based model

- **High DRI, poorer States show higher per capita allocations.** Odisha was allocated around INR 2,364 crore per year on average for 2021-26; with a population of ~42 million, the per-capita allocation comes to INR 563 per person per year earmarked for disaster response. Similar trends are observed in Assam and HP. These figures reflect the added weight of risk and the special area bonus in boosting the per capita resource availability for States with high risk or low population.
- **Low DRI, better-off States have much lower per capita funds.** Kerala, despite its recent disasters, had a low vulnerability score and moderate hazard score, resulting in a lower DRI. Its allocation is about INR 136 per person/year. Goa and Tamil Nadu also show similar trends. These allocations are considerably lower than those of the high-risk States.
- **States with DRI in the middle-range mostly have per capita fund allocation in the middle range.** Madhya Pradesh with ~72 million people, high poverty, and moderate hazards has been allocated ~INR 2,682 crore per year, which is about INR 372 per capita, reflecting its high vulnerability component. Gujarat with ~60 million population,

high multi-hazard and moderate poverty has been allocated ~INR 1,950 crore per year which is INR 325 per capita. Bihar with ~104 million population, very high poverty, and floods & earthquake hazards has around INR 200 per capita. This also suggests that even among large States, those with greater poverty or being affected by multiple hazards (like MP and Gujarat) secure higher per capita than those like Bihar which, despite extreme poverty and flood risk, might have been moderated by not having cyclone risk and by weighting expenditure.

3. Overall, FFC fund allocations have been effective in ensuring resource alignment to hazards. States facing greater hazard exposure show correspondingly higher allocations.

Key findings emerging from this review are documented below:

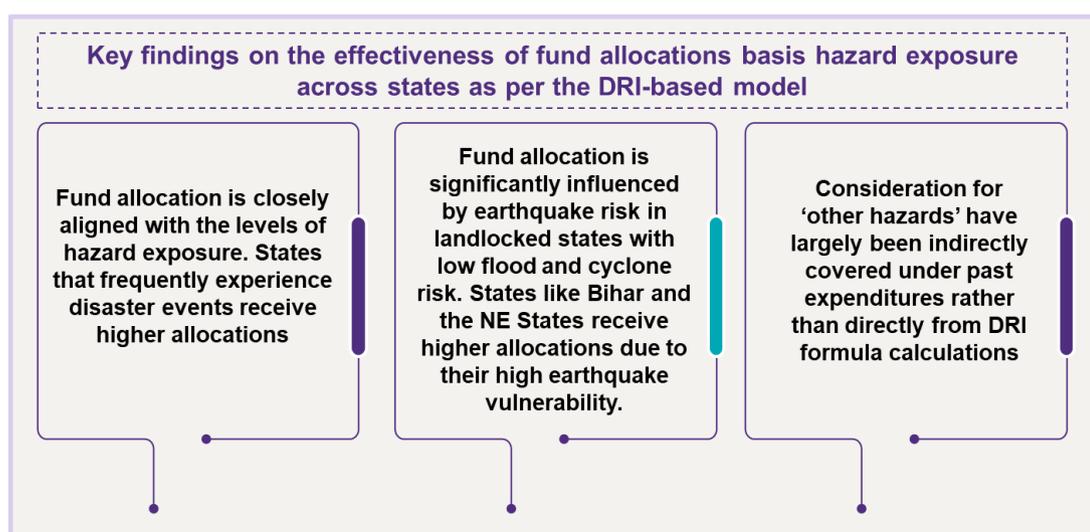


Figure 26: Key findings on the effectiveness of fund allocations basis hazard exposure across States as per the DRI-based model

- **The alignment of fund allocation with hazard exposure levels is high. States frequented by disaster events have high allocations.**
 - Assam faces severe floods annually. Nearly 40% of Assam’s land is flood-prone and annual flood losses average INR 200+ crores. The State has been allocated about INR 946 crores, indicating significant funds to tackle those floods.
 - Odisha which is hit by cyclones roughly every alternate year - Super Cyclone in 1999, Phailin in 2013, Hudhud in 2014, Titli in 2018, Fani in 2019, Bulbul in 2019, Amphan in 2020, Yaas in 2021, and others - and recurring droughts in its Western districts, has one among the highest allocations.
 - Gujarat, which has a history of big earthquakes (2001), cyclones (Kandla cyclone in 1998, Tauktae in 2021, and others), and droughts, also ranks high in allocation.

- Himachal Pradesh is an outlier where DRI is relatively lower (0.45), and the disaster incidence is increasing in recent years. However, SDRMF allocation under the FFC is 92% higher than that of the 14th FC allocation, driven by an additional 11% resilience bonus.
- Conversely, States with historically lower frequency of hazards have a smaller quantum of allocation. Punjab, with some floods & otherwise moderate risk, and Goa have very low allocations.
- **Consideration for 'other hazards' have largely been indirectly covered under past expenditures rather than directly from DRI formula calculations.** For 'other hazards', the FFC model did not explicitly give extra funds for States with heavy landslides or lightning issues beyond the uniform 10 points. This has the potential for a misalignment in specific contexts, for example, both Uttarakhand with high landslide risks and Punjab with no significant 'other hazard' risks, have got 10 points for 'other hazards'. However, major losses from these hazards typically also reflect in the 'past expenditure' component, which has 70% weightage. For example, Uttarakhand's Kedarnath landslides in 2013 resulted in high relief expenditure, which would raise its 'past expenditure' component and indirectly align funds to its landslide risk.

4. Overall, there is a reasonable correlation between DRI-based allocations and historical disaster impact as recorded by relief needs. This is by design – the expenditure component already embodied historical spending (a proxy for impacts), and the risk index added in hazard/vulnerability to capture latent risk that might not have materialized yet. By blending the two, the model ensures that States that historically needed more (expenditure) or are likely to need more in future (risk) are both covered.

- **Over the last few decades, States like Odisha, Andhra Pradesh, Bihar, West Bengal, and Assam have recorded very high disaster death tolls and damages, whereas States like Punjab, Kerala (until recently), or Meghalaya have had relatively fewer catastrophic events. The DRI and allocations reflect this trend.**
 - Odisha's DRI is the highest and its SDRF allocation is among the highest, indicating a strong correlation with its historically demonstrated needs. Bihar's allocation and high DRI align with it being historically one of the most disaster-affected in terms of population affected each year. Assam's high DRI and large fund allocations correlate with its historical flood impact. Over the decades, its cumulative flood impact has been enormous.
 - Kerala historically had fewer devastating events in the 2000s; these were mostly localized annual landslides or the occasional cyclone. The huge floods in 2018 were an outlier, albeit possibly climate-change driven. Kerala's lower DRI due to low poverty and only moderate hazard scores prior to 2018, meant its allocations were modest. Prior to 2018, the allocation would have seemed adequate, given limited

historical relief spending. However, the 2018 floods and another major flood in 2021 overwhelmed those resources, necessitating large NDRF aid. Therefore, in Kerala's case as also emerging in other Indian states, past impact was low, matching low allocation, but future risk appears higher than the past.

- Gujarat's historical disaster losses are among the highest in the country. The DRI captured its multi-hazard risk (Hazard scores – 15 for earthquake + 10 for cyclone + 15 for drought +10 for floods) and moderate poverty, giving it a high score. Gujarat's allocation is higher than most non-poor States, correlating with its history of big disasters.
- A few States with moderate DRI have also had catastrophic events. Tamil Nadu and Uttarakhand are examples. Tamil Nadu was hit by tsunami in 2004 and Chennai floods in 2015 but otherwise has moderate risk. Uttarakhand was impacted by the 2013 Kedarnath disaster which was huge, though Uttarakhand's DRI is in the mid-range due to lower poverty. In these cases, the DRI—based model's reliance on long-term probabilities rather than singular events is evident. Tamil Nadu's risk index got a boost due to experiences gathered from these disaster events, and its allocation of INR 7516 crores is high among large States. Uttarakhand's flood scoring led to a rise in its DRI. So, even one-off impacts did influence the risk assessment qualitatively.

5. The DRI's vulnerability component is solely based on poverty levels and does not consider other vulnerability factors like quality of infrastructure, effectiveness of early warning systems, education and awareness, health of populations, social capital, and institutional capacity.

Key findings emerging from this review are documented below:

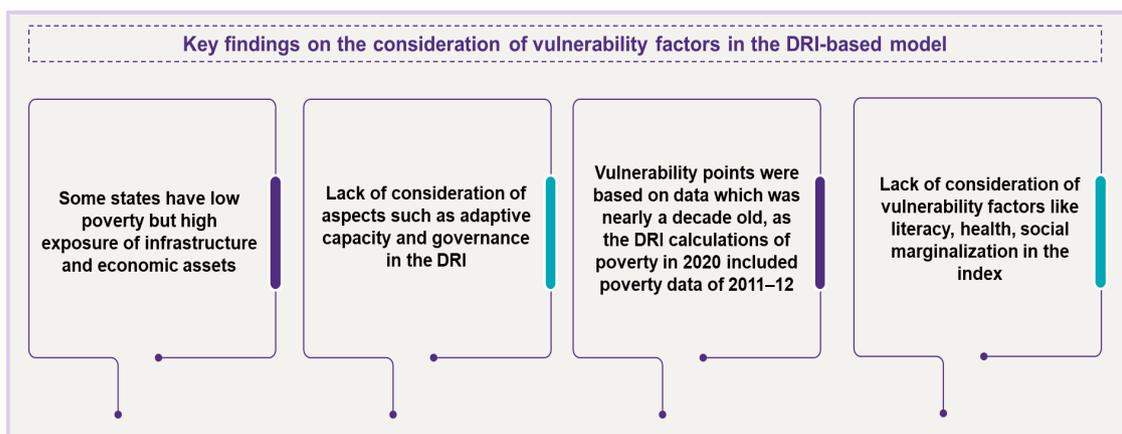


Figure 27: Key findings on the consideration of vulnerability factors in the DRI-based model

- **Some States have low poverty but high exposure of infrastructure and economic assets.** Examples are Maharashtra and Tamil Nadu which have big cities, and therefore urban vulnerability and infrastructure vulnerability. An urban middle-class household

may not be poor, but if living in an unsafe building or floodplain, their vulnerability to disaster impact is high. The current DRI does not account for urban risk factors like proportion of population in informal housing, population density, etc. Kerala is a pertinent example – low poverty, but a highly dense population with a lot of assets at risk from floods. The 2018 floods caused an estimated INR 27,000 crores of economic losses. However, its vulnerability score was a mere 10, which arguably underestimates the true vulnerability of its economy to disasters. In contrast, a State like Chhattisgarh with high poverty gets 30 points, but a significant portion of its poor are in relatively low disaster impact forest areas – vulnerable in general, but not specifically to hazards. Thus, poverty metric can both understate and overstate different facets of vulnerability.

- **The DRI does not consider adaptive capacity and governance - i.e. how well States are prepared or can respond - which is also a component of disaster vulnerability.** For instance, Odisha has high poverty and scored full 30 points for vulnerability, but Odisha is widely accepted as having strong disaster preparedness and response systems. Post the 1999 cyclone, the State invested heavily in early warning, coastal shelters, and evacuation planning. Such enhanced capacities reduce vulnerability to loss of lives significantly; the State has reported almost zero casualties in recent cyclones due to effective evacuations. On the other hand, a State with lower poverty but weaker institutions is more susceptible to incurring more losses than expected. The DRI has not captured these aspects of governance vulnerability or incentives for states with repeatedly high disaster-induced losses to invest in disaster mitigation rather than relying solely on SDRF allocations alone.
 - **The DRI calculations of poverty in 2020 included poverty data of 2011–12. This means that vulnerability points were based on data which was nearly a decade old.** Some States' economic conditions changed in that period. For example, Telangana and Andhra Pradesh had different development trajectories after the bifurcation in 2014, but both were assigned poverty scores of the erstwhile Andhra Pradesh. Socio-economic vulnerability is dynamic, and an update from ten years ago may not suffice.
 - **Vulnerability factors like literacy, health, social marginalization and others have not been considered in the index.** Literacy affects the understanding of warnings. Health affects resilience to heatwaves and pandemics. Social marginalization affects access to relief. Meghalaya's moderate poverty (~12% in 2011) was awarded a score of only 10 out of 30, but many remote tribal communities have limited access to services, which is a form of vulnerability not captured by poverty rate alone.
6. *The hazard scoring in DRI is static and derived from historical data and past occurrences. However, the frequency and intensity of many hazards are shifting due to climate change and environmental factors. A static index in a dynamic climate cannot accurately estimate risk.*

Due to data insufficiencies and quality issues, the accuracy of the DRI in reflecting true risk at any given point can be questioned. For instance, if a State’s risk increases rapidly, its allocation will not increase until the next Commission cycle – potentially leaving it underfunded. Conversely, if a State undertakes major mitigation and reduces risk, it will still get the higher allocation until scores update, perhaps giving it more than needed.

Key findings emerging from this review are documented below:

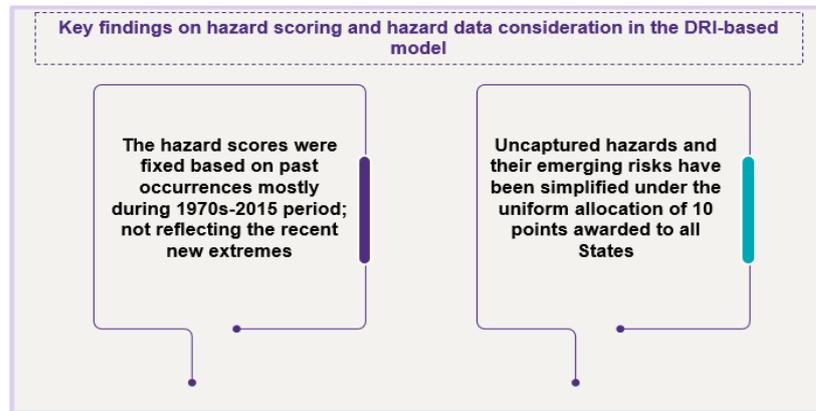


Figure 28: Key findings on hazard scoring and hazard data consideration in the DRI-based model

- **The hazard scores were fixed based on past occurrences mostly during 1970s-2015 period. These do not reflect the recent new extremes** like Kerala’s cyclones in 2017 (Cyclone Ockhi) and 2018 (Cyclone Gaja) which exceeded historical records of the State, the traditionally arid Rajasthan experiencing unusual flooding in 2017, and the drought-like situation in Nagaland in 2021 which usually has high rainfall and was not prior considered drought-prone). The current DRI model cannot automatically adjust a state’s scores until a new Finance Commission updates them (which could be 5 years or more). So, there is a risk that hazard scores become outdated. A static index in a dynamic climate cannot accurately estimate risk – some States might now warrant higher scores while some others maybe lower scores if mitigation has reduced risks.
- **Uncaptured hazards and their emerging risks have been simplified under the uniform allocation of 10 points awarded to all States.** Hill States like Himachal, Uttarakhand and the NE States have a much higher risk of landslides and cloudbursts than States which are predominantly plains. The 2023 cloudbursts and landslides in Himachal Pradesh, which caused large scale losses and damages, indicate that certain “other” hazards can be as devastating as the major ones. Yet, HP got the same 10 points for other hazards as every other State, meaning its DRI possibly underestimates its true risk.
- Lightning is India’s single largest hazard killer annually; States like Bihar, UP, Odisha record hundreds of lightning deaths each year, but these are again considered within the “others” category and awarded a score of 10.

- Additionally, heatwaves – which are becoming more frequent and deadly with climate change – were not considered at all in the DRI. States like Andhra Pradesh or Telangana has significant heatwave mortality risk, but zero explicit points for that hazard.

7. States vary widely in the governance capabilities and institutional capacities required to implement the SDRF. The effectiveness of the DRI-based allocation model also depends on how funds are governed and managed at State level.

Key findings emerging from this review of SDRF are documented below:

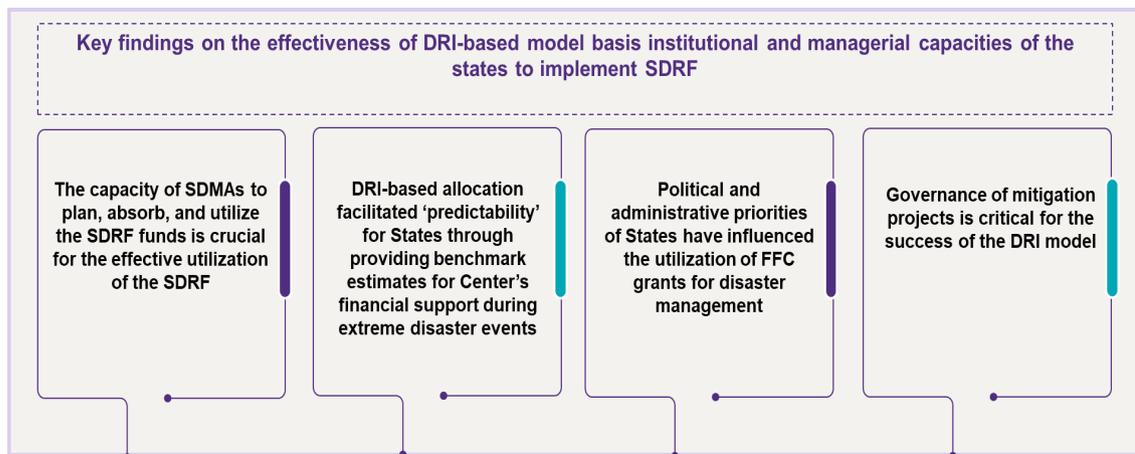


Figure 29: Key findings on the effectiveness of DRI-based model basis institutional and managerial capacities of the States to implement SDRF

- **The capacity of SDMA to plan, absorb, and utilize the SDRF funds is crucial for the effective utilization of the SDRF.** For instance, Gujarat and Odisha have relatively well-developed SDMA. These States are more likely to effectively use funds for preparedness and response. Odisha has shown an average utilization of ~46% between FY22 & F24, which may indicate that the investment done by the State towards Disaster Risk Reduction has resulted in lowering disaster impacts, relief efforts and SDRF utilization. The transition between using SDRF and subsequently requesting NDRF requires accurate damage assessment processes. Not all States have the same level of capabilities and capacities for Post Disaster Needs Assessment (PDNA). The Press Information Bureau (PIB) report for Kerala's 2024 floods, for instance, notes that Kerala conducted a PDNA estimating INR 2,219 crore recovery needs, which facilitated central aid. Such institutional capacities vary across States.
- **The DRI-based allocation facilitated 'predictability' for States through providing benchmark estimates for Centre's financial support during extreme disaster events.** Inter-governmental coordination, especially the interface between the States and the Centre, is an important factor in the utilization of FFC grants. Under SDRF, it is expected that States will take charge of initial disaster response, subsequently supplemented with the Centre's support through NDRF for severe disasters.

Coordination issues can arise if States delay reporting disasters or under-estimate damages to avoid time-consuming processes and compliances for Central assessments, or conversely over-estimate to secure additional funds. The DRI-based allocation to States sets clear expectations for NDRF support; hence, it is good for governance as it empowers States to make informed decisions at the time of disaster events. However, States still often seek additional aid for big disaster events, as evident from the multiple Inter-Ministerial Central Teams (IMCTs) deployed for floods and cyclones in 2024.

- **Governance of mitigation projects is critical for the success of the DRI model.** The FFC earmarked mitigation funds for risk reduction projects. States need the ability to plan and execute mitigation projects like flood embankments, seismic retrofitting, etc. using the SD MF.

8. The DRI-based allocation model must be complemented with efficient fund management to achieve its goal.

If a high-risk State gets a lot of funds but does not use them timely and correct manner, the objective of improving outcomes is defeated. There have been several audit findings and reports on SDRF utilization.

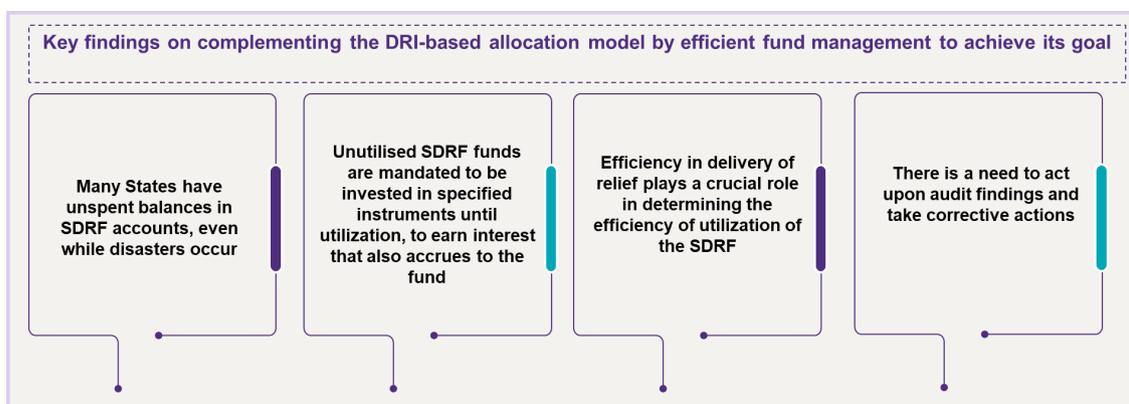


Figure 30: Key findings on complementing the DRI-based allocation model by efficient fund management

- **Many States have unspent balances in SDRF accounts, even while disasters occur.** For instance, as of April 2024, Kerala had an INR 394.99 crore balance in its SDRF which was a likely carry over from the previous year. The Central Government adjusted this when giving additional aid, which could imply that funds were unused. On the one hand, under-spending might mean fewer disasters than expected, but significant under-spending might indicate administrative bottlenecks in disbursing relief or a reluctance to release funds. Some States, conversely, overshoot their SDRF and frequently request top-ups from NDRF, showing possibly that their allocation was not enough, or their expenditure is high. The Kerala High Court, in December 2024, highlighted the lack of clarity over funds available with the SDRF in Kerala.

- **Unutilized SDRF funds are mandated to be invested in specified instruments until utilization, to earn interest that also accrues to the fund.** CAG audit reports mention that Kerala failed to invest as required, leading to INR 32.52 crore interest loss. In such cases, lost interest translates to a lost opportunity to augment the fund. Other States have had instances of delayed transfer of central share to the SDRF account, resulting in loss of interest or even erroneous accounting.
- **Efficiency in delivery of relief plays a crucial role in determining the efficiency of utilization of the SDRF.** Qualitatively, States that have robust systems like direct benefit transfers for relief, pre-stocked materials, etc. will have less wastage and ensure timely aid, thus using funds more efficiently. States that are disorganized may spend a lot but with leakage or delays.
- **There is a need to act upon audit findings and take corrective actions.** The SDRF is audited by CAG annually. Qualitative evidence shows repeated issues - multiple States not crediting interest, funds used for inadmissible purposes, delays in aid distribution. Efficiency can be improved by training officials in disaster accounting, enforcing penalties for diversion, and regularly updating relief norms to match ground realities.

3.2 Benchmarking India's DRM Financing Model against International Best Practices

India's approach to disaster fund distribution can be viewed in the global context of disaster risk financing. In several respects, India's model of pre-allocated, risk-indexed grants to sub-national governments is innovative and aligns with emerging best practices (Figure 31).



India's DRI-based fund allocation stands out internationally for its proactive and data-driven nature. It embodies the principle that 'funds should follow risk', which is widely acknowledged as the accurate approach within disaster risk finance circles. While countries like the US have enormous disaster funds, they allocate them post-facto; India ensures every state, from quake-prone Assam to cyclone-prone Gujarat, has a pre-funded relief pool roughly proportional to its risk. This model enhances preparedness and can be seen as a good practice for other federal nations.

On the other hand, **India can learn from global experiences by strengthening how funds incentivize risk reduction.** Integrating insurance mechanisms or resilience bonds could further augment the current system. Efforts are in progress at State-level to run pilots of insurance integration in a few States like Nagaland, Kerala, and Assam. However, this is yet to be taken up at a national level. Additionally, continually updating the risk metrics through drawing on global databases and climate models will keep India at the forefront of risk-responsive financing.

By benchmarking against and learning from international practices, and with periodic course corrections, India's model can effectively support its vision of a disaster-resilient nation while also serving as a template for others in managing disaster finances in a federal structure.

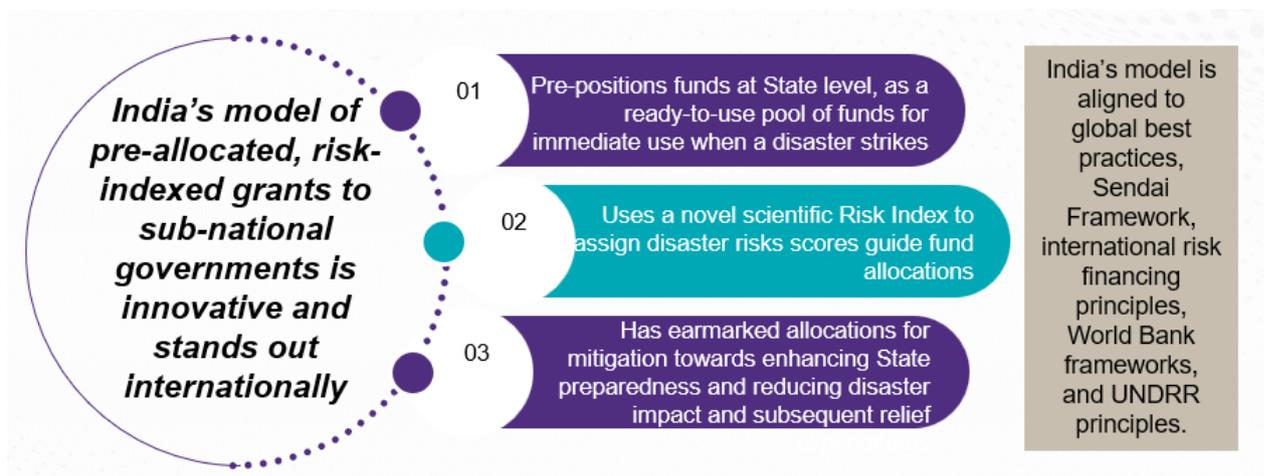


Figure 31: India's approach to disaster fund distribution

India's alignment to select global good practices for DRM resource allocation are provided in Annexure 4. The findings are presented in detail below: -

- **Ex-ante funding vis-à-vis Ex-post relief:** Several countries continue to rely on post facto funding mechanisms rather than advance allotments. For instance, in the United States, the federal government maintains a central **Disaster Relief Fund (DRF)** managed by the Federal Emergency Management Agency (FEMA), which is funded by Congress and disbursed after disasters occur. Similarly, countries like Canada and Australia use reimbursement schemes or cost-sharing for provinces post-event, rather than formula-based upfront transfers. In contrast, India's SDRF ensures that every State has a dedicated pool of funds **ready to be used when a disaster strikes**, which is considered a best practice in enabling quick response.
- **Risk-informed allocation:** The idea of using a risk index to guide funding is relatively novel. Few countries have formalized this in inter-governmental transfers. **Indonesia** is one example where a Disaster Risk Index (*Indeks Risiko Bencana*) was developed to assess regional risks and could be used for planning resources. India's FFC explicitly incorporating hazard and vulnerability data into finance is in line with the Sendai Framework's call to **embed DRR in budgeting**. It reflects a shift from purely reactive funding to **anticipatory, science-based financing**, which is a hallmark of best practice in disaster risk reduction.
- **Incentivizing resilience:** International best practices suggests that fund distribution should encourage risk reduction efforts, not just compensate for risk. Some countries tie funding to local prevention measures. For example, the **Philippines** requires local governments to set aside 5% of their revenues for a Local Disaster Risk Reduction and Management Fund, out of which a portion is for mitigation – if not used, it rolls over to a national fund. This creates a built-in incentive for preparation. While India's model does not directly penalize or reward States for their DRR investments, the creation of the **State Disaster Mitigation Fund** is a step in this direction.
- **Risk pooling and insurance:** Globally, countries are exploring insurance-based approaches, for example, the Caribbean Catastrophe Risk Insurance Facility, African Risk Capacity, wherein payouts are triggered by parametric indices. These provide quick liquidity after extreme events. India's SDRF and NDRF are mostly traditional/conventional budgetary financing, not insurance-based. However, by using a risk index to allocate, India achieves some of the same goals – essentially **pooling risk at the national level** and redistributing funds to higher-risk States. Internationally, an emerging best practice is to use a **risk-layered strategy**: reserve funds for high-frequency low-severity events, insurance for mid-tier events, and international aid for the rare catastrophic events.
- **Equity and solidarity:** In federations like Australia, there is a **Natural Disaster Relief and Recovery Arrangements (NDRRA)** framework where the federal government reimburses States based on certain formulas and thresholds of expenditure. India's model builds solidarity in advance, effectively, low-risk States subsidize high-risk States through the

formula, since the total corpus comes from the divisible pool of central revenues. This is akin to how the **European Union's Solidarity Fund** helps member countries after disasters, except India's is intra-country and pre-planned. In terms of best practice, having a rule-based but flexible funding mechanism that can surge resources to a hard-hit region is considered crucial.

Chapter 4: Recommendations for strengthening Disaster Risk Financing Capabilities

The integration of the DRI into India's inter-governmental fiscal transfer system for disaster management represents a significant shift toward a risk-informed funding paradigm. This study's assessment of the DRI-based allocation model indicates that it marks a substantial advancement over earlier expenditure-driven approaches. By aligning resources more closely with State-specific hazard exposure and vulnerability, the model has facilitated a more equitable and efficient distribution of disaster response funds. This shift is commendable for embedding principles of equity and efficiency into disaster financing. It acknowledges the inherently unequal nature of disaster occurrence and impact and seeks to address these disparities through targeted support to the most vulnerable and least resilient States. The DRI-based allocation model has succeeded in its core objective of introducing objectivity and risk-sensitivity into disaster financing.

It is recommended that the SFC and policymakers build upon the framework introduced by the FFC by refining the Disaster Risk Index (DRI), strengthening institutional capacities, and integrating preventive and resilience-focused measures. This will help reduce long-term dependence on large-scale relief expenditures. The SFC should leverage the strengths of the existing model while addressing its gaps, thereby enabling more effective responses to the diverse challenges faced by States.

In the following section, recommendations which could be considered by the SFC have been outlined, with the considerations of leveraging the strengths of the FFC model and addressing its limitations through targeted improvements.



Figure 32: Snapshot of the Recommendations

A. Developing a performance-based and readiness-based allocation model for SDMF, while continuing the DRI-based allocation for SDRF: The SDRF is explicitly response-focused — it funds immediate relief and restoration activities post-disaster. In this context, DRI-based proportionality is logical because States with higher disaster risks and exposure logically require larger, more responsive contingency funds. In contrast, the SDMF is intended for long-term mitigation activities, such as capacity building, resilient infrastructure, early warning systems, and risk reduction projects. Mitigation needs are strategic and programmatic, not solely a function of risk levels but also State preparedness levels, existing vulnerabilities, institutional capacities, and absorptive abilities. Unlike SDRF, SDMF is not designed to fully fund all mitigation requirements of a State. It is more catalytic — it provides seed or anchor funding to encourage risk reduction investments.

Hence, it would be more appropriate to continue DRI-based allocation for SDRF but re-examine its strict application to SDMF. For SDMF, a hybrid allocation model could be considered – (i) Base allocation to all States (to build basic mitigation capacities), (ii) A variable allocation based on DRI, and (iii) Possible performance-linked incentives for effective mitigation planning, fund utilization, and innovation.

B. Modify the DRI to better reflect the historical disaster profile and emerging climate-induced risks, with the recognition that these improvements alone may not address the cumulative funding requirements of states: Building on the analysis of the effectiveness of the DRI-based model and the assessment of global best practices in disaster fund allocation, the following may be incorporated to address the identified gaps and better reflect the historical disaster profile and emerging climate-induced risks:

- **Enrich the Vulnerability Metric:** To capture vulnerability more holistically, the model should consider relevant indicators and not only a single poverty indicator. It is recommended that a Composite Vulnerability Index is developed, which could include poverty rate, HDI components (literacy, health), housing strength (percentage of kutcha houses), and access to basic services. Even simple add-ons like differentiating rural vs urban poverty or including an index of SC/ST population proportion (often correlating with marginalization) might improve targeting. Another aspect is State resilience capacity – measured by past investments in mitigation or institutional performance – which could be incentive-compatible; high capacity might reduce effective vulnerability. This might translate into reduced allocations; however, such States likely can cope with lesser fund availability. The Finance Commission could constitute an Expert Committee to refine the Vulnerability Index so that States with hidden vulnerabilities like high urban risk or weak local governance are not overlooked and, conversely, States like Kerala and Tamil Nadu that have low poverty, but high exposure of economic assets are also duly considered.
- **Incorporate Additional Hazards or Proxies for “Other Hazards”:** The equal 10 points for “Other hazards” is generic. Future risk indices should attempt to differentiate major “other” perils. For example, a landslide risk score could be included for Hill States based on terrain susceptibility maps, or a heatwave risk score using frequency of extreme heat days for

States in the hot Indo-Gangetic and Deccan regions. Lightning could be considered by using data on lightning strike fatalities. These could be added with small weights or as part of an expanded hazard scoring rubric. The goal is to ensure that States like Uttarakhand, Himachal Pradesh, Meghalaya, Rajasthan, etc., are considered for these specific risks if they are above normal. Climate change indicators such as rate of increase in extreme events, or a climate vulnerability index might also be integrated for enhancing the relevance of allocations. If adding too many sub-components is not desirable, at least the Commission could adjust the 10 “others” points on a State-by-State basis in the next cycle by using qualitative judgement of these hazards. A more data-driven way would be to compute, say, average annual disaster deaths or damage (excluding the big four hazards) per capita by State, and use that to scale the 10 points.

- **Integrate Climate Change Projections:** It is recommended that climate change projections are integrated into risk assessments. A collaboration with the Indian Meteorological Department (IMD), IITs and other climate research bodies could yield projections of, say, expected increase in extreme rainfall, sea-level rise impact, etc. This could be factored into the allocation formula leading to appropriate allocations. This ensures that the DRI is not just reactive to past data but also proactive for coming trends.

C. Strengthening the NDMIS to ensure accuracy and transparency, and mandating updation for approvals and fund releases – The NDMIS should be strengthened to reflect updated State-wise allocations, releases, utilization percentage, and project status. The NDMIS should have live dashboards of all SDRF/SDMF receipts and expenditures of all States, flagging anomalies (for example - if a State has not spent any of its SDMF two years in a row, or if utilization suddenly drops). Early warnings can trigger engagement like official communication to the State leadership / Chief Secretary for a discussion to understand issues. The data from NDMIS is also invaluable during Finance Commission reviews.

Taking into account State experiences, recommendations for strengthening the NDMIS include (i) Flexibility to switch to State languages, enabling the concerned SDMA, DDMA, and other stakeholders to use NDMIS effectively, (ii) Options for report downloads in excel, PDF, etc. to enable sharing with other stakeholders, (iii) Provision of flexibility for SDMA to enter data in case of District officials inability to undertake data entry, delay in creation of user IDs of line departments, etc., (iv) Simplification of data entry field and provision for auto-fill of data in applicable fields, (v) Training sessions (blend of online and in-person) on effective use of portal, etc.

D. Facilitate Integration of Disaster Management Funds with Development Programs: The Finance Commission grants could be considered as seed money to disaster-proof infrastructure under larger schemes like MGNREGA, Smart Cities, Jal Jeevan Mission, etc. This calls for guiding all Line Ministries and State Departments to dovetail SDMF/NDMF inputs into their projects. To institutionalize this, the State Planning Department should be involved in SDMF project approval, ensuring DRR projects align with overall State planning.

E. Strengthen Project Pipeline and Technical Support for Mitigation Funds: Both national and State mitigation funds suffer when there is a lack of well-prepared project proposals. It is critical to build technical capacities at State and District levels to identify and design mitigation projects. The NDMA and Central agencies could consider expanding initiatives to help States develop DPRs for SDMF and NDMF. This could include creating a roster of accredited experts (Engineers, Hydrologists, etc.) to assist States, and funding feasibility studies from SDMF so that a robust pipeline of bankable projects is ready. For instance, NDMA could deploy technical support teams to each NE State for a few months to craft 5-year mitigation plans, ensuring funds do not lie idle due to planning gaps.

States would immensely gain from retrofitting schools in seismic zones, flood-proofing critical roads, improving drainage in urban flood hotspots, etc. NDMA can publish model projects and facilitate DPR preparation for States.

F. Flexible allocation for 'Localized Disasters': Under the SDRF guidelines, States are provided the flexibility of utilizing 10% of allocations for providing immediate relief to the victims of disasters that are 'disasters' within the local context in the State and not included in the list of notified disasters by the MHA. Due to the vast and diverse nature of disaster events across States, 10% of the allocation may not be sufficient to address relief efforts across all States. States like Assam have highlighted the insufficiency of the specific allocation for 'localized disasters'. Hence, flexibility may be provided to the States to increase the permissible level of utilization of localized disaster on the basis of the approval of the State Executive Committee. If required, it could be mandated that State should submit a list of expected localized hazards (based on occurrence of localized hazards in the previous year) to the NDMA at the beginning of the year, to obtain prior approvals for flexible spending on localized hazards.

G. Improve Coordination Between Relief and Mitigation Efforts: Often, response and mitigation are compartmentalized, with different teams handling SDRF and SDMF. States should institute a mechanism where after every major disaster, a review is done to identify mitigation measures to prevent a recurrence and then allocate SDMF/NDMF funds for those measures. This loop ensures learning from disasters translates into action. On a routine basis, the heads of Response (Relief Commissioners) and Mitigation (SDMA CEOs) should meet and exchange data; relief expenditure patterns can highlight vulnerabilities, for example - if a District continues to avail significant amounts of SDRF year after year for the same river flooding, it could indicate that flood mitigation investments should be planned. It is important that both relief and mitigation interventions supplement each other to create a cohesive DRM strategy where funds are deployed optimally across the disaster management cycle.

H. Strengthen Monitoring, Evaluation and Transparency to make it outcome-focused rather than only input-focused: A rigorous M&E framework should be developed for the DRM funds. Presently, monitoring is largely input-focused rather than outcome-focused. While financial audits by CAG ensure probity, outcome monitoring and evaluation is critical

for assessing the effectiveness and efficiency of fund utilization. It is proposed that NDMA works with States to define KPIs for fund usage – for example, number of people relocated from risk zones, percentage decrease in average annual losses, etc.

The outcome evaluation should systematically assess how mitigation projects, once completed, reduce disaster losses over time. For NDMF projects, mid-term and post-project evaluations by Independent Experts could be mandated to assess effectiveness and adapt if required. For example – in the case of lightning project, its impact on casualty reduction could be evaluated after two storm seasons. If the results are positive, the implementation can be replicated in other States after due contextual customization. If results are not satisfactory, the strategy requires to be tweaked. Monitoring should also track that maintenance of mitigation assets is happening; inclusion of a KPI on 'X% of mitigation structures built are still functional after 5 years' would be relevant. Annual DRM Funds Impact Reports could be published, highlighting not just expenditures but results (lives saved, properties protected). This will help justify investments and learn what works. Enhanced M&E will ensure the funds – both response and mitigation – achieve their intended outcomes and allow mid-course corrections in policy.

- I. **Strengthen State Capacity and Accountability:** Funds alone do not guarantee outcomes. It is crucial to invest in capacity building of SDMA and DDMA (District Disaster Management Authorities). The Union Government, through NDMA or MHA, should offer technical assistance and training to States on disaster risk reduction planning, efficient relief distribution, and financial management of SDRF. Best practices from better-performing States can be codified into guidelines for others. Moreover, accountability needs reinforcement; the CAG audits must be taken seriously. Any misuse of SDRF, like funds spent on non-disaster items and/or non-adherence to guidelines) should lead to corrective actions and perhaps impact future installments.
- J. **Updating Norms and Guidelines:** The NDMA should periodically review and update the list of eligible disasters and activities based on experience and climate change trends. Also, financial norms (relief amounts) should be adjusted for inflation at regular intervals so that States do not find SDRF insufficient. As the Schedule of Rates (SOR) varies sector-wise and from State to State, and is updated at varying frequencies by different States, the SDRF and NDRF guidelines may provide a ceiling budget under the Recovery and Reconstruction window. The States may be provided the flexibility to adopt the rates for various sectors on the basis of the prevalent SOR in the State as the local conditions may vary. On SDMA/NDMA, issuing supplementary guidelines capturing best practices – for example, a compendium of model mitigation projects with designs, cost norms, and outcomes – can guide States and quicken implementation. Essentially, the guidelines should be 'evolving' documents', refined every couple of years with inputs from relevant stakeholders like SDMA, experts, community representatives, etc. This ensures the funds remain relevant and user-friendly.

- K. Enhance Flexibility in Utilization of Relief Funds:** To ensure SDRF/NDRF funds are fully effective, it would be useful to update and relax norms where needed. States could be allowed some flexibility to re-appropriate (beyond the current permissible 10%) between SDRF sub-windows; for example - if a State has no major relief needs in a year, it should be allowed (with intimation) to use a portion of SDRF for recovery preparedness projects. This would prevent large unspent balances in low-disaster years and channel funds to risk reduction – effectively moving towards mitigation where appropriate. Similarly, if a severe disaster occurs, States should be permitted to temporarily draw on SDMF for immediate recovery if SDRF is exhausted, with conditions to refill later. This kind of flexible use across funds, while maintaining accounting separation, would increase overall responsiveness and efficiency.
- L. Establish databases of losses, damages and exposure:** Most States do not have a strong historical data base of disaster losses including insured losses. An updated disaster event database including losses incurred, damage assessment, and settlement history for each major peril, would enable the State to build a robust catastrophic modelling and their outputs – AAL, PML, exposures values can be used to compare the adequacy of the disaster funding and also determine the disaster risk financing needs for the States. Further, these inputs can help in quantifying the climate change implications on the State’s disaster financing.
- M. Simplify and Expedite Approval Processes:** While maintaining accountability, the process to approve and release funds – both central (NDRF/NDMF) and State (SDRF/SDMF) – could be streamlined for speed. On NDMF and SDMF, States may be given greater autonomy up to a threshold; for example - projects under INR 10 crores can be approved by SEC at State-level itself. A faster Central clearance for innovative projects – perhaps through a Standing Committee that can approve innovative proposals within 30 days – would encourage States to propose creative projects anticipating quicker turn-around times for approvals. Further, a part of a NDRF may be structured to be disbursed on some parametric criteria in the interest of speed.
- N. Encourage Risk Transfer Mechanisms:** Over the long term, the government can consider linking the DRI model with risk transfer instruments. For instance, for very high-risk States, a portion of funds could be used to pay premium for parametric insurance that quickly pays out in severe disasters, complementing the SDRF and/or NDRF. While this goes beyond allocation formula, such a policy step can make funding more efficient. It is suggested that multiple risk protection/risk transfer instruments may be considered – catastrophic risk insurance with parametric options covering the residential and public assets wherein the government finances the cost of insurance for the low-income households, while the middle- and upper-income households and corporates can be encouraged or incentivized through premium subsidies to protect their properties through voluntary insurance protections.

The FC could recommend pilot projects where States with high exposure pool some funds into an insurance pool, reducing reliance on ad-hoc aid. Any such innovation would require careful design, but if successful, could reduce the burden on SDRF and/or NDRF in extreme years, allowing the allocated funds to stretch further.

By implementing these recommendations – boosting capacity, simplifying procedures, incentivizing performance, integrating efforts, and maintaining flexibility – India can significantly improve the management and utilization of its disaster risk funds. This will ensure that every allocated rupee delivers maximum risk reduction and relief, strengthening the country's resilience in the face of escalating hazards.

Disaster Risk Management Financing in India Review

Annexures

June 2025



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Annexure 1: The Disaster Risk Index (DRI) and its application for fund allocation

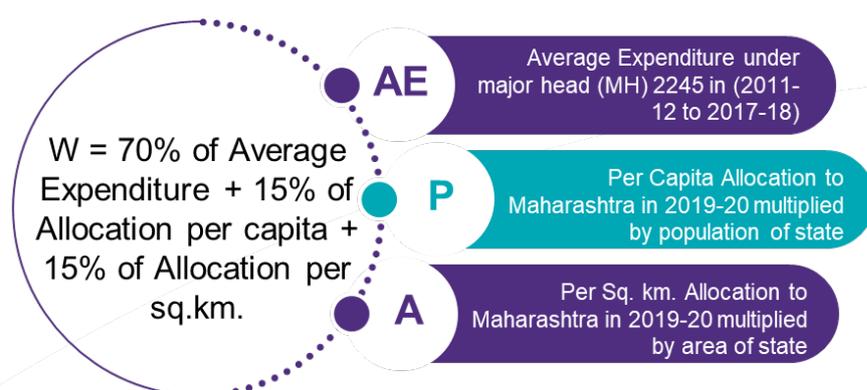
The methodology followed by the FFC for determining allocation considers, in addition to the expenditure incurred by the States towards disaster management, the area, the population and the risk profile of each State.

These parameters were used to assess the following key focus areas for allocation:

- (i) **Capacity** (determined by Expenditure)
- (ii) **Risk Exposure** (determined by Area and Population)
- (iii) **Hazard and Vulnerability** (determined by DRI score or Risk Profile of States)¹

Capacity: Average Expenditure (AE)

To determine the expenditure incurred by States towards disaster management, the expenditure under the 'Major Head 2245: Relief on Account of Natural Calamities' for the preceding 7 Financial Years to the FFC, i.e., FY12 to FY18 was taken into consideration. This, after subtracting the NDRF allocation, will account for the utilization under the SDRF for the States. The resulting expenditure was adjusted for inflation and the average expenditure for the 7-year period was determined for each State. The **average expenditure** was assigned a **weightage of 70%** towards determining the base allocation for each State.



Risk Exposure: Population(P) and Area(A)

To determine the Population and the Area factors related to Risk Exposure, the per-capita and per-sq.km. allocation to Maharashtra were considered. Maharashtra was considered the baseline due to the following factors:

- Maharashtra had highest SDRF allocation in FY20 (last year of 14th FC allocations)
- Maharashtra is neither the largest State of India nor the most populous, providing a good statistical fit for determining the per-capita and per-sq.km. allocation

¹ XV Finance Commission (2020) Finance Commission in COVID Times Report for 2021-26 Volume II: 'Annex 8.3: Methodology for Determination of State Level Allocations of Disaster Management' pages 310-320

- Due to its comparatively large area, Maharashtra is exposed to multiple hazards and has varied geographies. The State is prone to floods, landslides, drought, cyclones and earthquakes.

The weightage given to **Area & Population** to determine the base allocation was **15% each**.

$$\text{Weighted Population-wise Allocation(P)} = 15\% * (\text{per Capita Allocation in Maharashtra} * \text{Population of the State})$$

$$\text{Weighted Area-wise Allocation(A)} = 15\% * (\text{per sq.km. Allocation in Maharashtra} * \text{Area of the State})$$

The weighted population and area -wise allocation, and the weighted average expenditure were added to determine the 'W' value, which was then multiplied by the DRI score for the respective States (Hazard and Vulnerability) to obtain value 'Y'. '**Z**', the base value for each State was arrived at by adding **W & Y**.

$$W = AE_{70} + P_{15} + A_{15}$$

$$Y = W * DRI$$

$$Z = W + Y$$

$$= W + W * DRI$$

$$= W (1 + DRI)$$

The allocation for FY21 & FY22 for each State was calculated by adjusting the base value, considering an annual inflation of 5%. The ten **North-Eastern and Himalayan States** were provided with an **additional allocation of 11%** to finance **greater attention to infrastructure resilience** in these States owing to greater vulnerability to multiple disasters such as floods, landslides, and other mountainous hazards.

Methodology for determining the DRI Score

The FFC calculated the DRI score through a quantitative exercise wherein the probability of hazards striking States, and the extent of vulnerability were assigned scores. A disaster is caused when a hazard event impacts a population, and the level of the impact is determined by the vulnerability of the population. Hence, hazard and vulnerability were given a weightage of 70% and 30% respectively to calculate a composite score for each State, thus ranking States based on their risk scores.

Hazard

The FFC considered four prevalent natural hazards - floods, droughts, cyclones, and earthquakes - with each hazard being assigned a maximum score of 15. All other disasters (landslides, avalanches, and others) were classified as 'other localized hazards' and all States were accorded a score of 10 uniformly under this category bringing the overall hazard weightage to 70. Each of the key hazards were scored on a scale (0, 5, 10, 15) based on the State's probability or proportion of exposure (for example - % of area prone to floods).

The FFC determined the probability of hazard occurrence for key hazards based on the hazard zonation as per the following:

- **Flood:** Flood-prone areas as estimated by the Rashtriya Barh Aayog (RBA) of 1980 and the extent of flood-prone areas reported by the State Governments to the Eleventh Five-Year Plan Working Group.

- **Drought:** Map, published by the Ministry of Agriculture, depicting the frequency of drought occurrence across States during the period 2000-2015.
- **Cyclone:** The Cyclone Risk Map developed by the National Disaster Management Authority (NDMA).
- **Earthquake:** The Seismic Map of India developed by the Bureau of Indian Standards (BIS).

Scoring Methodology

Scoring	0	5	10	15
Flood (% of area impacted by flood)	-	<10%	10-20%	>20%
Drought (based on share of area prone to chronic drought)	Goa, NE States, & Uttarakhand	All other States except Goa, NE States, & Uttarakhand	Significant share of 'drought prone' areas	Large share 'chronically drought-prone' areas
Cyclone (based on districts prone to cyclones)	Others	Moderate cyclone-prone districts	High cyclone-prone districts	Very high cyclone-prone districts
Earthquake	-	All other States	Moderate seismic risk: Seismic Zones III and II	High seismic risk: Seismic Zones V and IV

Table 1: Scoring Methodology for Hazard

Vulnerability

The vulnerability score was assigned based on the population living below the poverty line (BPL) in each State in 2011-12, as per the Tendulkar Methodology. This is on similar lines to the additional allocation for States with socio-economic vulnerability, as recommended by the 12th FC.

Poverty Rate (r) [% of BPL population]	Vulnerability Score
r > 26%	30
13% > r > 26%	20
r < 13%	10

Table 2: Scoring Methodology for Vulnerability

The State-wise allocations under SDRMF on the basis of FFC's allocation methodology is as follows:

State	SDRMF Allocation (INR crores)						Total
	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	
Andhra Pradesh	1491	1491	1566	1644	1726	1812	8239
Assam	858	858	901	946	994	1043	4742
Bihar	1888	1888	1983	2081	2185	2295	10432
Chhattisgarh	576	576	605	635	667	700	3183
Goa	15	15	16	16	17	19	83
Gujarat	1765	1765	1853	1946	2044	2145	9753
Haryana	655	655	688	722	758	796	3619
Himachal Pradesh	454	454	476	501	525	552	2508
Jharkhand	757	757	794	834	877	920	4182
Karnataka	1054	1054	1107	1162	1220	1281	5824
Kerala	419	419	440	462	485	510	2316
Madhya Pradesh	2427	2427	2548	2676	2810	2950	13411
Maharashtra	4296	4296	4511	4736	4973	5221	23737
Manipur	47	47	49	52	55	57	260
Meghalaya	73	73	76	81	84	89	403
Mizoram	52	52	54	58	60	63	287
Nagaland	46	46	48	51	53	56	254
Odisha	2139	2139	2246	2358	2476	2600	11819
Punjab	660	660	693	728	764	803	3648
Rajasthan	1975	1975	2074	2178	2286	2400	10913
Sikkim	56	56	59	62	65	68	310
Tamil Nadu	1360	1360	1428	1500	1575	1653	7516
Telangana	599	599	629	660	694	728	3310

Tripura	76	76	79	84	88	93	420
Uttar Pradesh	2578	2578	2707	2842	2985	3134	14246
Uttarakhand	1041	1041	1093	1148	1205	1265	5752
West Bengal	1348	1348	1416	1487	1560	1639	7450
Total (for all 28 states)	28983	28983	30431	31957	33552	35230	160153

Table 3: State Disaster Risk Management Fund (SDRMF) allocation from Fifteenth Finance Commission

Annexure 2: An Overview of SDRMF and NDRMF Guidelines

SDRF Guidelines	
Overview	The State Disaster Response Fund (SDRF) is a fund constituted under Section 48(1) (a) of the Disaster Management Act, 2005. The SDRF guidelines have been issued under section 62 of the DM Act, 2005 and are intended to be operational between FYs 2021-22 and 2025-26 i.e. the period of the Fifteenth Finance Commission.
Key Highlights	<ul style="list-style-type: none"> • The SDRF shall be used only for meeting expenditures related to providing immediate relief to the victims of cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloud burst, pest attack, frost and cold wave. • The State Government may utilize up to 10% of the annual allocation of the SDRF for providing immediate relief to the victims of natural disasters which are considered as 'disasters' within the local context of the State. • The unspent balance in the SDRF account at the end of the current financial year shall be the opening balance of the SDRF account for the next financial year. • The Central Government will contribute 75% of the funds of SDRF for all States, except for the North-Eastern and Himalayan (NEH) States. The balance of 25% of funds of SDRF will be contributed by the State Government. For the North-Eastern and Himalayan (NEH) States, the Centre will contribute 90% of the total annual allocation and the State Government will contribute 10%. • The National Disaster Management Information System (NDMIS) will be used to document, consolidate, and track the fund availability and utilization of the SDRMF and the NDRMF. State Governments should update the details of expenditure incurred from SDRMF and NDRMF in the NDMIS. • The SDRF would receive 80% of the allocation of the total SDRMF, while SDMF would receive 20% • The SDRF comprises three sub-financing windows: (i) Response and Relief (40%), (ii) Recovery and Reconstruction (30%), (iii) Preparedness and Capacity-building (10%). • The financing windows of SDRF and SDMF are not inter-changeable. However, there are provisions for flexibility of re-allocation within the three sub-financing windows of SDRF for each financial year. • All the activities under SDRF would be administrated as per GOI-approved items & norms. • The State Government shall furnish a certificate to the Ministry of Home Affairs (MHA) and the Ministry of Finance every year, indicating that the amount received under the relevant budget head has been credited to the SDRF along with the State's share, and also accompanied by an updated statement of expenditure and balance amount available in the SDRF. • When the SDRF of a State is replenished with additional grant-in-aid from the NDRF, the State Government shall treat this grant in the same manner as the funds in the SDRF, as far as transfer and accounting are concerned.
Reference: SDRF Guidelines (2022)	

Table 4: Overview of SDRF Guidelines

NDRF Guidelines	
Overview	NDRF is a fund constituted under Section 46 of the DM Act, 2005. The guidelines are issued under Section 46(2) to supplement funds from the SDRF of a State, towards facilitating immediate relief in case of calamities of severe nature. The guidelines are intended to be operational between FYs 2021-22 and 2025- 26 i.e. the period of the Fifteenth Finance Commission.
Key Highlights	<ul style="list-style-type: none"> • The NDRF would receive 80% of the allocation of the total NDRMF. The NDRF comprises three sub-financing windows: (i) Response and Relief (40 % of NDRMF), (ii) Recovery and Reconstruction (30 % of NDRMF) and (iii) Preparedness and Capacity-building (10 % of NDRMF). • The funding windows of NDRF and NDMF are not inter-changeable. However, there are provisions for flexibility for re-allocation within the three sub-financing windows of NDRF for each financial year. • Natural calamities of cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloud burst, pest attack and cold wave and frost, that are considered to be of severe nature by the Government of India, and that require expenditure by a State Government more than the balances available in its own SDRF, will qualify for additional assistance from NDRF. • Contributions or grants made by any person or institution for the purpose of disaster management shall be credited to the NDRF, as an additional source of funding NDRF. The Central Government has prescribed the modalities for receipt of contributions/ grants made for the purpose of disaster management in the NDRF. • After the period of natural calamity due to severe nature, an Inter Ministerial Central Team (IMCT) will be constituted immediately by the Ministry of Home Affairs (MHA), for detailed assessment of humanitarian needs towards response and relief for immediate decision and for making final recommendations for allocation of additional funds from NDRF. • The first charge for relief during a disaster should be on SDRF, and the release of additional assistance from NDRF will be subject to adjustment of 50% of the balance available in the SDRF as on 1st April of the financial year during which the disaster has happened.
Reference: NDRF Guidelines (2022)	

Table 5: Overview of NDRF Guidelines

SDMF Guidelines	
Overview	The State Disaster Mitigation Fund (SDMF) is constituted under Section 48 (1) (c) of the DM Act, 2005. The SDMF guidelines are intended to be operational between FYs 2021-22 and 2025-26 which is the period of the Fifteenth Finance Commission. In consultation with the SDMA, it is operated by the State Executive Committee (SEC) with an objective to release grants-in-aid for mitigation projects. This fund is exclusively for the purpose of mitigation projects for disasters covered under the SDRF/NDRF guidelines, and the State-specific local disasters notified by the State Governments.
Key Highlights	<ul style="list-style-type: none"> • The SDMF shall be used for local-level and community-based interventions, for risk reduction and to promote environment-friendly settlements and livelihood practices. • Mitigation measures can be divided into structural and/or non-structural mitigation measures. <ul style="list-style-type: none"> ○ Structural mitigation measures include any physical construction to reduce or avoid possible impacts of hazards, or the application of engineering techniques or technology to achieve hazard resistance and resilience in structures or systems. ○ Non-Structural measures only involve the use of knowledge, practices, policies, laws/regulations, public awareness-raising, training, and education, and others. These measures attempt to strengthen building laws, location-specific planning/strategies, forest management/restoration of mangroves, awareness campaigns, and others. • Risk assessment of hazards, exposure, vulnerability, and impacts are conducted by DM Authorities at the National and State-level; based on the risk assessment, the DM Authorities will prepare long-term mitigation strategy for their respective jurisdictions, which may form the basis for designing mitigation projects under SDMF • Large-scale mitigation interventions such as construction of coastal walls, flood embankments, and support for drought resilience shall be pursued through regular development schemes and not from the mitigation fund. • SDMF will be applied by SDMA for appraisal, monitoring and supervision of the mitigation projects. The closing balance for each financial year would be maintained for the opening balance for the next financial year. • 20% of SDRMF will form the SDMF of States. The Central Government will contribute 75% and balance 25% of funds of SDMF will be contributed by the State Governments except for the North-Eastern and Himalayan States, for which the Central Government will contribute 90% and the State Governments shall contribute 10%. • The State Government shall furnish a certificate to the MHA and to the Ministry of Finance indicating that the amount received earlier has been credited to the SDMF along with the State's share of contribution, accompanied by a statement with an up-to-date expenditure and the balance amount available in the SDMF. • For the purpose of updation of data on NDMIS, States should provide online data of expenditure incurred from SDMF in line with the Central Government's approved norms, on a real time basis.
Reference: SDMF Guidelines (2022)	

Table 6: Overview of SDMF Guidelines

NDMF Guidelines	
Overview	The National Disaster Mitigation Fund (NDMF) is constituted under Section 47 (1)(c) of the DM Act, 2005. The NDMF guidelines are intended to be operational between FYs 2021-22 and 2025-26, which is the period of the Fifteenth Finance Commission. The fund is for the purpose of mitigation projects with respect to disasters covered within the NDRF Guidelines. The fund is used for local level and community-based interventions which reduce risk and promote environment-friendly settlements and practices.
Key Highlights	<ul style="list-style-type: none"> • The NDMF is applied by NDMA for appraisal, monitoring, and supervision of mitigation projects. • Mitigation measures can be structural and non-structural. <ul style="list-style-type: none"> ○ Structural measures include any physical construction to reduce or avoid possible impacts of hazards or the application of engineering techniques or technology to achieve hazard resistance and resilience in structures or systems. ○ Non – structural measures do not involve physical construction but use of knowledge practices, policies laws and regulations. • 20% of the National Disaster Risk Management Fund (NDRMF) constitutes NDMF for the period of 2021-22 to 2025-26. • The State Governments shall submit project proposals approved by the State Executive Committee (SEC) to the MHA. The MHA shall forward the proposals to the Appraisal Committee of the NDMA. The Appraisal Committee will submit its recommendations to the MHA, which will subsequently place the proposal before the Sub-Committee of the National Executive Committee (SC-NEC). The High-Level Committee (HLC) will subsequently approve the quantum of allocation under the NDMF based on the recommendations of the SC-NEC. • The FFC has earmarked NDMF allocations for four priority areas: - <ul style="list-style-type: none"> ○ Catalytic assistance to twelve most drought-prone States ○ Managing seismic and landslide risks in ten hill States ○ Reducing the risk of urban flooding in seven most populous cities ○ Mitigation measures to prevent erosion.
<i>Reference: NDMF Guideline (2022)</i>	

Table 7: Overview of NDMF Guidelines

Annexure 3: Case studies from Deep Dive States

1. Case Study: Assam

Demographic and Socio-economic Profile

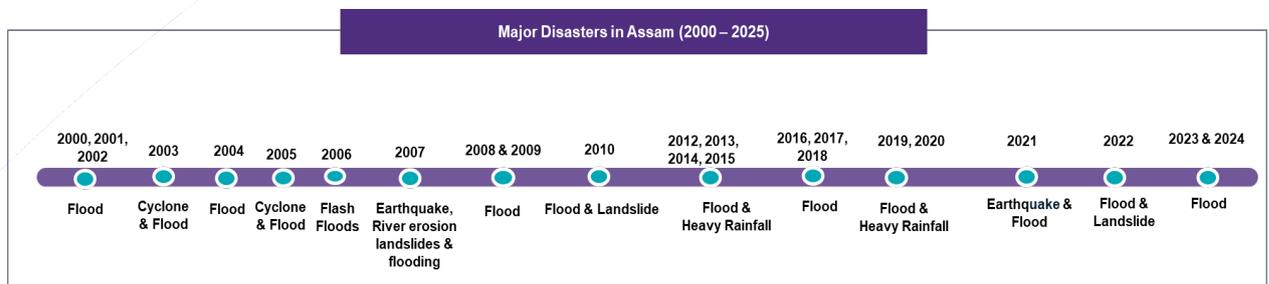
Assam is highly prone to multiple hazards due to its topographic and climatic conditions and is vulnerable to numerous and extreme climate events like earthquakes, floods, landslides, erosion, cyclone, and drought.² As per the Census 2011, the total population of Assam is 3.12 crores (2.58% of national population), with a population density of 398 individuals per sq.km. Total area of Assam is 78,438 sq.km. 86% of the population lived in rural areas and 14% in urban areas.³ The sex ratio in Assam is 958, as compared to the national average of 943. The total literacy rate of Assam is 72.19% which is less than the average literacy rate of 72.98% of India.⁴ 31.98% of the population is below the poverty line.

Risk Profile

The State of Assam has experienced recurring disasters and climate hazards such as earthquakes, landslides, catastrophic floods and soil erosion resulting in huge losses to lives, property, livelihoods, infrastructure and public utilities. Floods have been a recurrent phenomenon, and 40% of Assam’s area is prone to floods due to the incidence of heavy rainfall. Between the years 2012 and 2020, floods affected 3.9 million people. With increase in incessant rainfall associated with climate change and associated erosion, landslides have also been on the rise. Around 60% of the State’s land area

Assam: Risk Profile

- DRI Score: **0.7**; DRI Rank **#7**;
- **#8** in Forest Fire Index
- **#8** in Flood Vulnerability Index
- **#9** in Composite Hazard Index
- **#13** in Composite Vulnerability Index
- **#12** in Depletion of Forest Cover



is impacted by the cyclones originating in the Bay of Bengal every year. The State also falls within earthquake-prone seismic zones IV and V.

² [World Bank Document](#)

³ [State Profile of Assam | Directorate of Economics and Statistics | Government of Assam, India](#)

⁴ [Assam Population Census 2011, Assam Religion, Literacy, Sex Ratio - Census Ind](#)

Implementation of FFC Recommendations on DRM

Assam has been allocated a total SDRMF of INR 4742 crores for the period FY22 - FY26. This includes the Central share of INR 4268 crores (90%) and the State share of INR 474 crores (10%).

SDRF

Assam has an overall utilization of ~113% under the SDRF between FY22 and FY25, with the highest utilization of 129.49% in FY23. The SDRF utilization has been high in all financial years at ~94%, ~129%, ~126% and ~103% in FY22, FY23, FY24 and FY25 respectively

The high utilization levels can be attributed to intense floods and landslides in these years.

As per data shared by the State, utilization has been highest (51.56%) under the Recovery and Reconstruction sub-window, when compared to the other two sub-windows. The SDRF allocations have been utilized for reconstruction activities including repairing rural roads, health centers, Anganwadi centers, primary schools, and public water supply infrastructure.

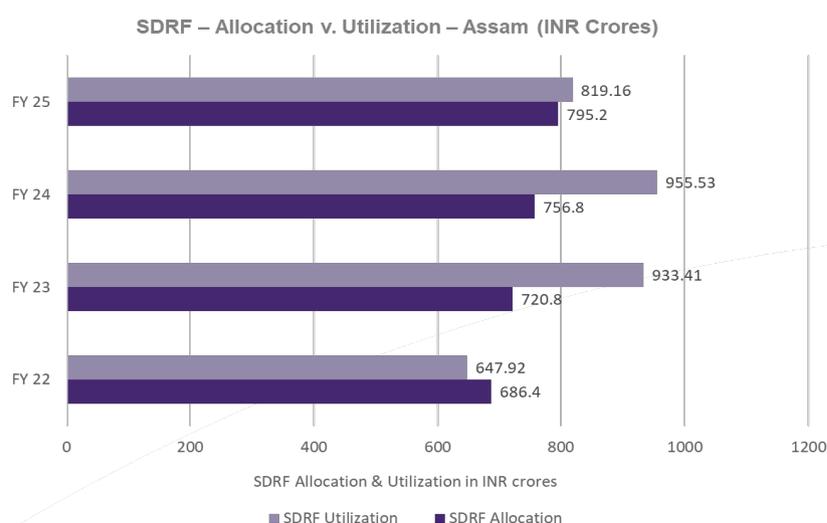


Figure 4: SDRF Allocation vs Utilization (in INR crores)- Assam

The SDRF allocations were found to have largely supported the State in meeting its DM needs. However, the SDRF and NDRF norms are perceived to have insufficient provisions for addressing damages to public and private infrastructure, over and beyond the presently available norms.

Sub-windows under SDRF	Utilization (as % of SDRMF)
Response & Relief	37.26 %
Recovery & Reconstruction	51.56 %
Preparedness & Capacity Building	1.98 %

Also, the provision of 10% allocation for 'local disasters'

has not been sufficient to address relief efforts for storms, lightning, etc.

Table 8: Utilization based on SDRF Sub-windows- Assam

NDRF

Assam received a NDRF Allocation of INR 250 crores in FY23⁵, in the aftermath of the floods which impacted the State in 2022. This corresponds with the high utilization of SDRF in FY23. Under the Preparedness and Capacity Building sub-window,

Assam received an allocation of INR 29 crores for Modernization of Fire Services in FY25 and is in the process of being utilized for training of fire safety volunteers, procuring Hard Boats (Fibre Reinforced Polymer Boats), Inflatable Rubber Boats and Fire Proximity Suits.⁶

SDMF

SDMF was established in Assam as per notification issued in October 2021. However, there has been no fund utilization under SDMF in FY22 and FY23, while the State received an allocation of INR 171 crores in FY22 and INR 180.2 crores in FY23. Assam incurred an expenditure of merely INR 1.6 crores in FY24, while the allocation for the same year was INR 198.2 crores.

However, the uptake of funds in SDMF is expected to improve up as the SDMF Appraisal Committee of the State has approved 155 proposals worth INR 413 crores, of which 66 proposals amounting to INR 195 crores have also been approved by the SEC. The projects under SDMF have been proposed by the Departments of PWD - NH & Buildings, Irrigation, Soil Conservation, Water Resources Development, Housing & Urban Affairs, Education, and Power. Knowledge Institutions for these projects include CSIR-NEIST, RIKA, NESAC, and others.

Projects have been approved under SDMF for various mitigation measures including new technological interventions towards protection of slopes, anti-erosion measures, development or construction of link drains, bank protection measures, and installation of Seismic Monitoring Stations.

NDMF

An allocation of INR 250 crores was earmarked for all NE States for 'Managing Seismic & landslide risk' sub-window. However, Assam has not availed this earmarked allocation.

⁵ [CAG \(2022-23\), 'Finance Accounts'](#) (Data from the CAG Audit has been relied on as there was a slight discrepancy between the data from the State Government and the CAG Audit)

⁶ [Minutes of the 52nd Meeting of Assam State Executive Committee](#)

2. Case Study: Gujarat

Demographic and Socio-economic Profile

Gujarat is located on the western coast of India and has the longest coastline of 1,600 km in the country with well-developed infrastructure facilities. The total area of Gujarat is 196,244 sq. km. As per Census 2011, the total population of Gujarat is 6.04 crores, which is 4.99% of the country's population. 42.6% people lived in urban regions and 57.4% in rural areas.⁷ The population density is 308 per sq. km which is lower than the national average of 382 per sq.km. 16.63% of the population is below the poverty line.

Risk Profile

Gujarat is vulnerable to several major hazards including drought, floods, cyclones, earthquakes, tsunami and heatwaves because of its geoclimatic location⁸. Gujarat is classified into three seismic zones, Zones III to V, with varying levels of seismic risk (Medium to High). 12 out of 16 coastal districts in Gujarat are highly prone to cyclones. The coastline is also vulnerable to associated hazards such as storm surges and floods.

Gujarat: Risk Profile

- DRI Score: **0.8**; DRI Rank **#3**;
- **#11** in High-Risk Seismic Zone-IV
- **#8** in Tsunami Hazard Index
- **#5** in Composite Hazard Index
- **#5** in Composite Vulnerability Index
- **#9** in Flood Vulnerability Index
- **#2** in Coastal Erosion Index
- **#4** in Fire Hazard Index
- **#8** in Depletion of Mangrove
- **#5** in Cyclone Hazard Index

The major hazards that have impacted Gujarat in the last 2 decades are depicted below.

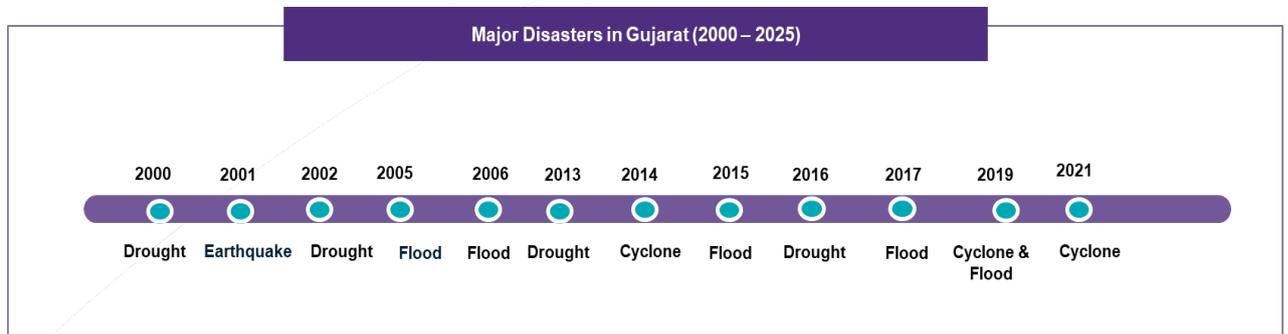


Figure 6: Timeline of Major Disasters in Gujarat

Implementation of FFC Recommendations on DRM

Gujarat was allocated a total SDRMF of INR 9753 crores for the period FY22 - FY 26. This includes the Central Government share of INR 7316 crores (75%) and the State share of INR 2437 crores (25%).

⁷ <https://www.censusindia.co.in/States/gujarat>

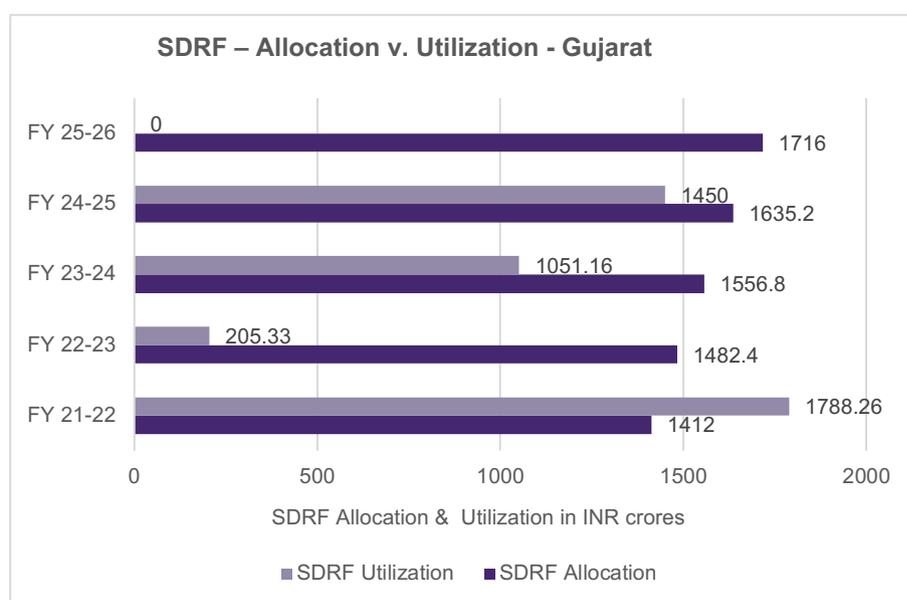
⁸ [Gujarat State Disaster Management Plan](#)

SDRF

Total SDRF utilization between FY22 and FY25 is 73.85%. SDRF utilization of ~126% incurred was in FY22, triggered by severe flooding, Cyclone Tauktae and COVID-19. SDRF allocations have been utilized to support response and relief efforts, provide compensation for household and property losses, road repairs, bridge repairs, repair and restoration of houses, drinking water supply, rescue operations, public health, cattle health, air drop of food, and compensation for agricultural and livestock losses.

In FY25, 66.5% of SDRMF was utilized for Relief & Response. 3.74% and 0.54% were utilized for Recovery & Reconstruction, and Preparedness & Capacity Building respectively.

While the State officials mentioned that the SDRF allocations for FY25 have not been disbursed by the Central Government, the fund release data from the MHA indicates that a sum of INR 600 crores was released as part of the 1st installment of SDRF in FY25⁹. This disconnect in information needs to be further examined.



Gujarat is among the few States where procedural lapses and administrative delays occurred in the transfer of the Centre's share of SDRF allocations.

NDRF

Gujarat received an NDRF allocation of INR 1000 crores (~10% of assistance sought by the State) in FY22 in the aftermath of Cyclone Tauktae.

SDMF

The SDMF was established in Gujarat in 2023. SDMF utilization in Gujarat is zero, as the Line Departments have not submitted proposals for mitigation projects. To encourage the uptake of the projects under SDMF, the SDMF guidelines have again been circulated among the Line

⁹ [Allocation and Release of SDRF and NDRF, FY 25](#)

Departments. Mitigation initiatives including Emergency Response Centers (ERC) in Vapi and Ankleshwar are currently under consideration for approval.

NDMF

Gujarat was earmarked NDMF allocations for (i) INR 250 crores under 'Reducing risk of Urban Flooding' in Ahmedabad, and (ii) INR 100 crores under 'Catalytic Assistance to develop district-level drought mitigation plans.

The project for reducing the risk of urban flooding in Ahmedabad Municipal Corporation has an overall outlay of ~INR 275 crores. Gujarat has not availed the allocation for developing district-level drought mitigation plans.

3. Case Study: Kerala

Demographic and Socio-economic Profile

Kerala is one of the most densely populated States, with a population density of 860 persons per sq. km and a population of over 3.3 crores, as per the 2011 census¹⁰. The State has an area of 38,864 sq.km.

Kerala has fared well in terms of human development indicators including literacy rate (94%), life expectancy at birth (75 years), infant mortality rate (6), sex ratio (1.084) and proportion of multidimensionally poor population (0.55%)¹¹. Kerala is one of the most urbanised States in the country with around 47% of the population living in urban areas. The State also has one of the lowest rural-urban divides in the country.

Kerala has one of the highest percentages of population of elderly citizens (60 years and above) at 12.7% as per the 2011 census²³. As per the Disaster Score Card for States and Union Territories of India¹², in addition to the vulnerability of the State to various hazards, Kerala ranks 3rd in Physical Infrastructure Vulnerability, 2nd in Disability Vulnerability Index, and 1st in Elderly Vulnerability Index. This indicates the State's high socio-economic vulnerability despite its remarkable socio-economic indicators.

Risk Profile

Kerala is a highly vulnerable State due to its geographical feature and climatic conditions, from its 590km long shoreline to the ecologically fragile and steep terrain of the Western Ghats.¹³ Around 39 hazards are categorised as natural and anthropogenic hazards under the Kerala State Disaster Management Plan. Floods and landslides are the most common natural hazards along with seasonal drought-like conditions during the summer.

The frequency and intensity of natural disasters in Kerala have been increasing in the recent years. In 2018, Kerala received erratic and incessant rainfall which triggered the worst floods the State has seen since 1924. Kerala has been experiencing extreme rainfall, and associated floods and landslides in subsequent years (2019, 2020, 2021 and 2022). The most recent major disaster in the State is the landslide which impacted the Wayanad District in July 2024.

Kerala: Risk Profile

- DRI Score: **0.55**; DRI Rank **#16**
- **#6** in Tsunami Hazard Index
- **#11** in Composite Hazard Index
- **#7** in Landslide Hazard Index
- **#7** in Flood Vulnerability Index
- **#7** in Coastal Erosion
- **#11** in Cyclone Hazard Index
- **#2** in Depletion of Mangroves

¹⁰ [Kerala State Planning Board\(2024\)](#)

¹¹ [NITI Aayog \(2023\)](#)

¹² [UNDP & MHA \(2018\)](#)

¹³ [Post-Disaster Needs Assessment - Kerala | United Nations Development Programme](#)

A timeline of the major hazards which have impacted Kerala in the last 25 recent years are as follows:

Implementation of FFC Recommendations on DRM

Kerala has a DRI score of 55, and ranks 20th in terms of allocation. The State has been provided an allocation of INR 2316 crores under the SDRMF. This includes the Central Government share of 75% (INR 1738 crores) and the State share of 25% (INR 578 crores).

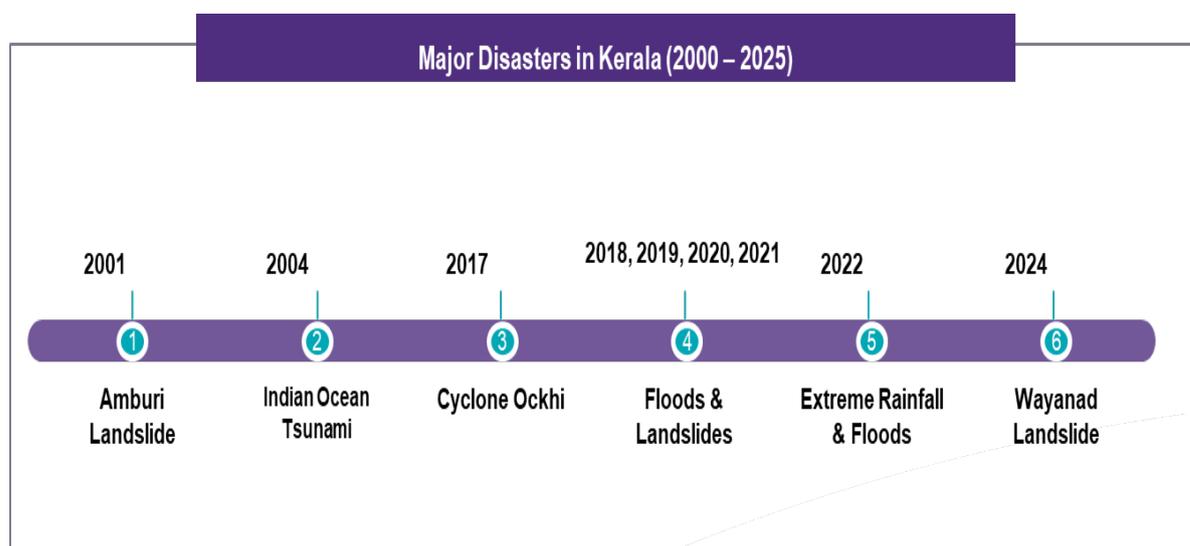


Figure 9: Timeline of Major Disasters in Kerala

SDRF

The average SDRF utilization in Kerala between FY22 to FY25 was 104%. The State showed greater utilization in FY22 & FY23 which can be attributed to the impact of the COVID-19 pandemic, and severe landslides and flashfloods triggered by extreme rainfall.

The State has not undertaken a distinct categorization of the utilization under (i) Relief & Response, (ii) Recovery &

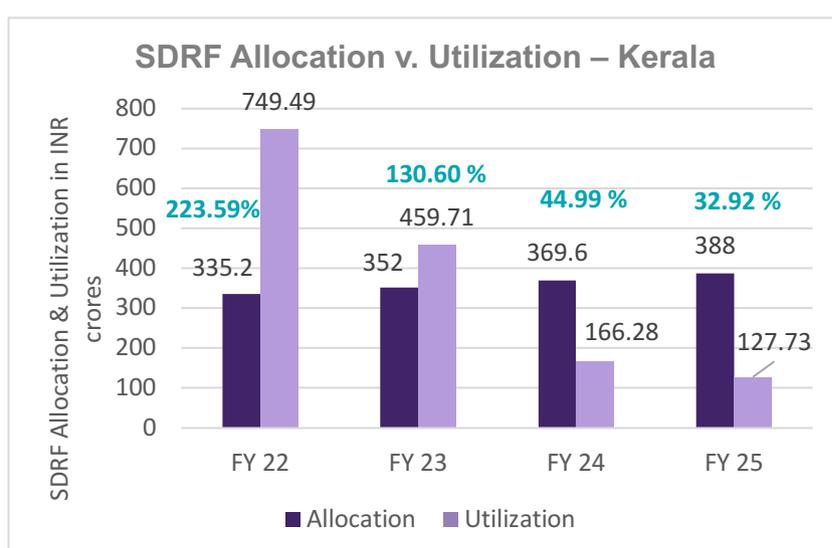


Figure 10: SDRF Allocation vs Utilization - Kerala

Reconstruction and (iii) Preparedness and Capacity Building, while most of the funds may have been utilized for relief & response.

In addition to immediate post-disaster relief and response activities such as relief to farmers to counter agricultural losses, evacuation of impacted population, and supply of essential goods, the State has undertaken repair and reconstruction of damaged roads, bridges, buildings, water supply systems, and other public infrastructure under the SDRF. The SDRF and NDRF compensation norms were generally insufficient to address reconstruction needs for housing, roads, and other infrastructure in the State, given the local construction costs and PWD rates. For example, as per the administrative sanction accorded for the reconstruction of 7 flood-damaged PWD roads under the Rebuild Kerala Initiative (RKI), the estimated cost for 207.35 kms of road was INR 1101.79 crores (roughly INR 5.3 crores per km)¹⁴. Under SDRF norms, the assistance provided for repair of State Highways and Major District Roads is INR 1 lakh per km in normal areas and INR 1.25 lakhs per km in hilly areas, while that for rural roads is INR 60,000 per km in normal areas and INR 75,000 per km in hilly areas.

The State's fiscal condition does not affect the utilization of funds. The State's share is allocated in the annual budget, allowing planned activities to commence even before the Central funds are received.

NDRF

Until FY24, Kerala had not accessed any allocation under the NDRF. In FY25, allocation under NDRF was sought in the aftermath of the the landslides and flashfloods that hit Wayanad in July 2024.

After the issuance of NDRF R&R norms in August 2024, Kerala submitted the Post Disaster Need Assessment report for accessing NDRF under the Recovery and Reconstruction sub-window. A request for an allocation of INR 2219 crores was submitted on the basis of the PDNA for support towards reconstruction. The Multi Sectoral Team assessed the requirement as per the Guidelines on Constitution and Administration of the Recovery & Reconstruction Funding Window, and an allocation of INR 530 crores (~24% of assistance requested by the State) was approved as on 25 March 2025¹⁵.

Under the allocation earmarked for the Modernization of Fire Services in the Preparedness & Capacity Building sub-window of the NDRF, an allocation of INR 121 crores has been approved for Kerala.

¹⁴ Planning and Economic Affairs Department, Government of Kerala 'G.O. (Rt.) No. 317/2020/P&EA'

¹⁵ [Press Information Bureau \(25 March 2025\)](#)

SDMF

Kerala has an overall SDMF utilization of 0.8%. The year-wise utilization was 0.07%, 6.18% and 4.72% in FY 23, FY 24 & FY 25 respectively.

One of the projects being implemented under the SDMF is the development of a Flood Monitoring System for river basins, with an allocation of INR 1.42 crores. Also, proposals planned for mitigating coastal erosion have been submitted for approval. Kerala's micro-level landslide mapping and community-based landslide early warning project, being piloted through SDMF funds, has the potential to drastically reduce landslide risks.

The SDMA has taken steps to train and build capacities of Panchayati Raj Institutions and Urban Local Bodies to apply for SDMF Funds.

The SDMA suggested that providing the States' flexibility in apportioning at least a portion of the mitigation funding to complement or enhance existing interventions could improve the utilization of the SDMF allocation; it was challenging to receive new/fresh project proposals from the Line Departments, this is also the primary reason for limited utilization of the SDMF.

NDMF

Funds were not earmarked for Kerala under the NDMF.

iv. Case Study: Madhya Pradesh

Demographic and socio-economic profile

Madhya Pradesh, a landlocked State located in central India, presents a diverse demographic profile. According to the 2011 Census, the State's population is approximately 7.26 crores with a population density of 236 persons per sq. km. The sex ratio stands at 931 females for every 1000 males, which is slightly below the national average of 943. The literacy rate in Madhya Pradesh is 69.32%, with a notable disparity between genders - male literacy is 78.73%, while female literacy is 59.24%. The State covers an area of 3,08,245 sq.km, making it the second largest State in India in terms of area¹⁶. There are 52 districts. The State has a poverty rate of around 31.7%, which is more pronounced in rural areas compared to urban regions¹⁷.

Risk Profile

Madhya Pradesh is vulnerable to natural disasters due to its distinctive geo-climatic characteristics and the presence of industrial establishments. The primary natural hazards affecting the State include earthquakes, floods, droughts, and fires. The Bhopal gas tragedy was one of the worst manmade disasters in history of the State.

Among the various natural hazards impacting Madhya Pradesh, floods are the most frequent and devastating. It has been observed that over 80% of the annual rainfall occurs within a short monsoon period of three months. This concentration of rainfall leads to heavy siltation, flash floods, and inadequate discharge of floodwaters, sometimes resulting in breaches of embankments. In August 2021, heavy rains caused severe flooding in northern Madhya Pradesh, impacting over 1,200 villages.

Nearly 6,000 people were rescued, and there was significant damage to infrastructure, along with disruptions to rail and telecom services. Similar flooding events occurred in July 2016 and September 2019.

Droughts are the next significant hazard for Madhya Pradesh. In 2016, insufficient rainfall led to 46 out of 52 districts being declared drought-affected. The Bundelkhand region faced a severe drought from September 2006 to May 2008, lasting 21 months. Additionally, drought impacted large parts of the State during 2002-2003.

Earthquake is also a significant hazard, with many areas of the State experiencing moderately high seismic activity. Based on the Vulnerability Atlas of India, districts in Madhya Pradesh have been classified into medium and low hazard zones. Medium earthquake-prone districts fall under the moderately high-risk Zone III, while low earthquake-prone districts are categorized under the low damage risk Zone II.

Madhya Pradesh: Risk Profile

- DRI Score: **0.60**; DRI Rank **#12**
- **#15** in Composite Hazard Index
- **#8** in Drought Hazard Index
- **#13** in Flood Hazard Index
- **#16** in Industrial Hazard Index
- **#21** in Earthquake Hazard Index

¹⁶ <https://censusofindia.net/madhya-pradesh/23>

¹⁷ <https://pib.gov.in/PressReleaseframePage.aspx?PRID=1942055>

A timeline of major disasters that affected Madhya Pradesh during the time period 2000-2025 is shown in the figure below:

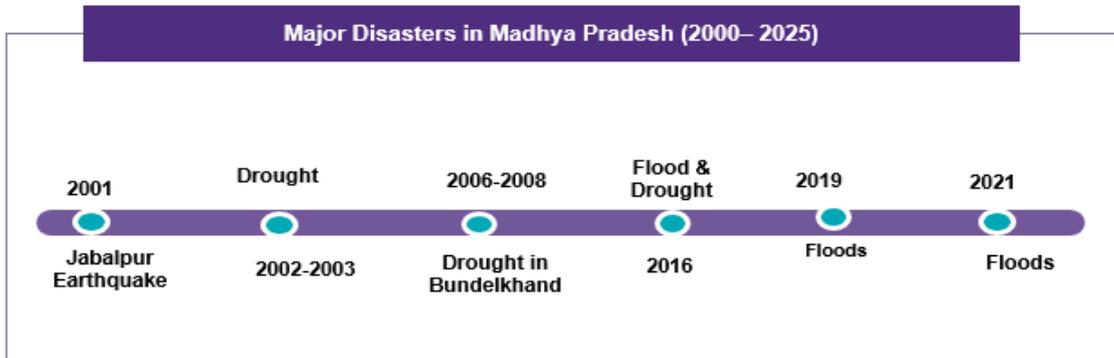


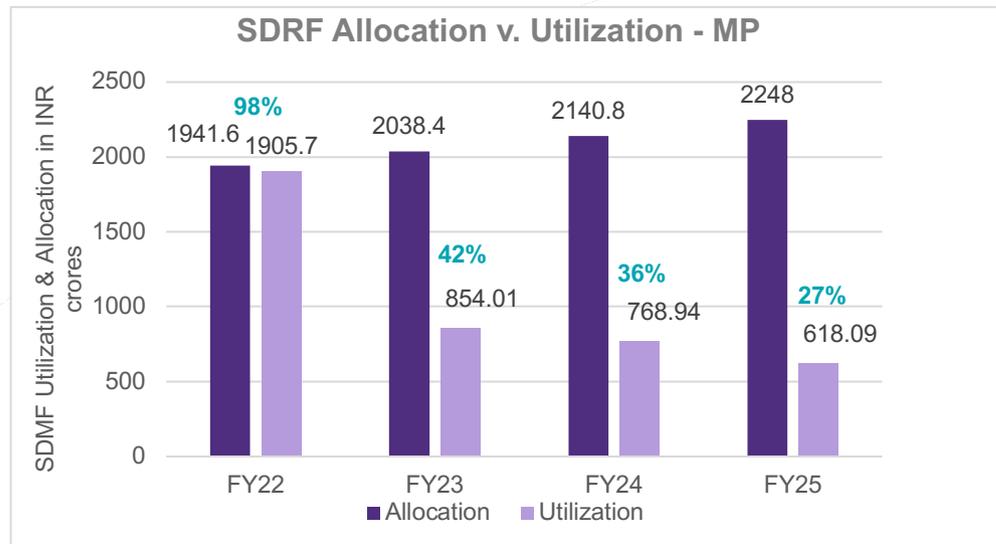
Figure 12: Timeline of Major Disasters in Madhya Pradesh (2000-2025)

Implementation of FFC Recommendations on DRM

Madhya Pradesh was allocated a total SDRMF of INR 13411 crores for FY22 - FY26. This included INR 10728 crores (80%) for SDRF and INR 2683 crores (20%) for SDMF. Ranked 12th on the DRI, the State ranks 3rd among the 28 States in terms of fund allocation.

SDRF

During the period FY22 - FY25, the State achieved an average SDRF¹⁸ utilization rate of ~50% with the total allocation and utilization amounting to INR 8369 crores and INR 4147 crores respectively.



FY22 witnessed the highest utilization rate (98%), primarily due to the impact of COVID-19 and the devastating floods of 2021. The floods affected around 12,500 villages and necessitated the rescue of 6,200 individuals. In FY23, FY24 and FY25, the State achieved an average fund utilization rate of 42%, 36% and 27% respectively; the relatively lower utilization levels when compared to FY22 may be attributed to low incidence of disaster events.

¹⁸ As per the data provided by the MP State Government, the SDRF utilization for FY22 is INR 1305 crores. However, as per CAG Audit, utilization value is INR 1905.7 crores. INR 1905.7 Crore is used for the purpose of analysis. Closer examination of the same is required.

Within SDRF, the Response and Relief sub-window had the highest (69%) average utilization. The fund was used for providing gratuitous relief, agriculture subsidy, relief for animal loss, relief camp, rescue (including air lifting) and assistance for house damage. The average utilization of Recovery and Reconstruction sub-window of the SDRF is around 16%; with key activities encompassing measures for quarantine sample collection and screening, procurement of essential equipment/labs for COVID-19, flood-related works and repair of infrastructure.

The Preparedness & Capacity Building sub-window saw an average utilization of 13%. Important activities funded under this include the establishment of disaster management command center, development of an online Disaster Warning and Response System (DWRS), and establishment of Vallabh Bhawan Situation Room (VBSR) for State-level disaster management. The VBSR was crucial for monitoring and coordinating responses to the Karama dam disaster, severe floods during 2022-2024, a fire in Harda in 2024, and borewell accidents.

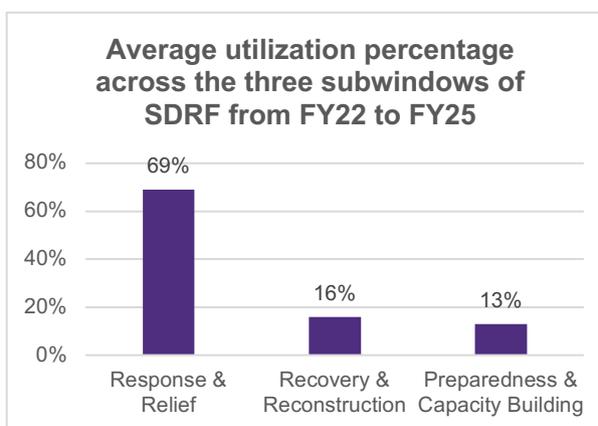


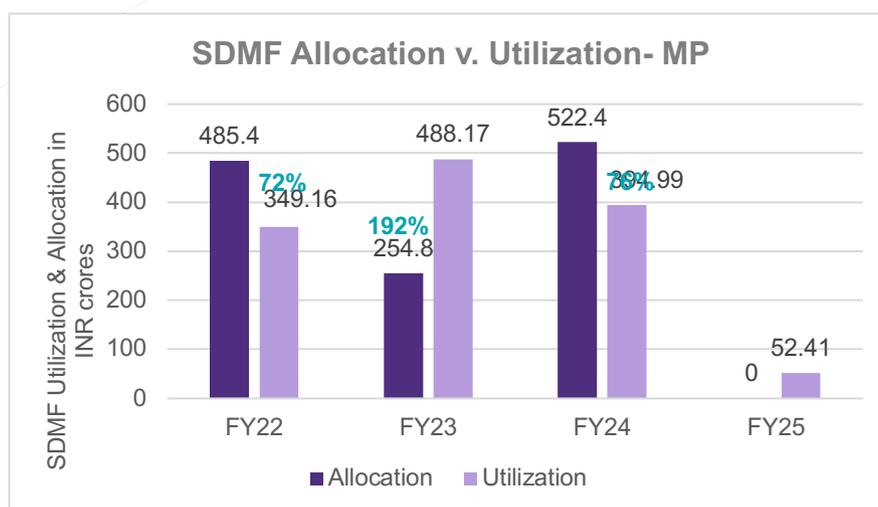
Figure 14: Average utilization percentage across the three sub-windows of SDRF from FY22-25- Madhya Pradesh

NDRF

During the floods in 2021, the Government of Madhya Pradesh submitted a memorandum to request additional funding from the NDRF. The funds received from the NDRF were utilized to carry out relief, recovery and reconstruction activities by the MPSDMA. For relief activities, approximately INR 433.63 crore were utilized while around INR 166.87 crores were allocated for reconstruction activities, including infrastructure repairs.

SDMF

The SDMF account was created as per the notification issued on 29th June 2021. Madhya Pradesh has achieved SDMF utilization of 95.79% during FY22-FY25.



Under the SDMF, the Water Resources Department has undertaken significant restoration projects to address flood and drought issues. Notable projects include (a) installation of drainage gates at Halali dam, benefiting farmers in inundated areas, (b) improvement of State tanks and canals across various districts to conserve water for drought relief, (c) enhancement of the Seep Kolar link to supply drinking

water to Bhopal, and (d) flood discharge management at Mohanpura dam to prevent downstream erosion.

The SDMF guidelines state that a maximum of 50% of the SDMF amount can be used for one disaster. In Madhya Pradesh, higher utilization levels could have been facilitated if this norm was relaxed. Though the SDMF guidelines include a provision for seeking approval of the SC-NEC for flexibility on this 'one-disaster' norm, the State has not made use of it.

NDMF

MP has not accessed NDMF Allocations of INR 100 crores for Catalytic Assistance to develop district level drought mitigation plans. Drought mitigation interventions have been undertaken under the SDMF.

5. Case Study: Meghalaya

Demographic & Socio-economic Profile

Meghalaya, a North Eastern State of India, has 12 districts spreading across the Garo Hills, Khasi Hills, and Jaintia Hills regions and has an area of 22,429 square kilometers¹⁹. The population stands at around 2.96 million with a large segment of its population being under 30 years old²⁰. The population density of the State is 132 persons persq. km. The gender ratio is fairly balanced, with 989 females for every 1000 males. The primary ethnic groups in Meghalaya are the Khasi, Garo, and Jaintia tribes.

The proportion of the population experiencing multi-dimensional poverty in Meghalaya is 27.79%²¹. The State's literacy rate stands at approximately 75.48%, with continuous efforts being made to enhance educational facilities and infrastructure.

Risk profile

Meghalaya is situated in Seismic Zone V which is the highest risk zone for earthquakes. The State's hilly terrain and heavy monsoon rains contribute to frequent landslides, which often disrupt transportation and cause substantial damage to infrastructure. Flash floods are also common due to intense rainfall and the region's topography, leading to loss of life, property, and agricultural productivity.

The impacts of climate change, such as increased rainfall intensity and shifting weather patterns, are expected to worsen the frequency and severity of natural disasters in Meghalaya. Rapid urbanization, especially in cities like Shillong, has heightened the vulnerability to disasters with unplanned construction and inadequate infrastructure exacerbating the effects of natural hazards. Additionally, the State experiences severe thunderstorms and lightning, posing significant risks to both life and property²².

Meghalaya: Risk Profile

- DRI Score:**0.4**; DRI Rank **#26**
- **#20** in Composite Hazard Index
- **#1** in Earthquake Hazard Index
- **#2** in Forest Fire Index
- **#8** in Landslide Hazard Index

¹⁹ [isfr-2019-vol-ii-meghalaya.pdf](#)

²⁰ [Meghalaya Population Census 2011, Meghalaya Religion, Literacy, Sex Ratio - Census India](#)

²¹ [Meghalaya's Progress In Reducing Multidimensional Poverty As Per NITI Aayog's Index Meghalaya's Progress In Reducing Multidimensional Poverty As Per NITI Aayog's Index](#)

²² <https://irade.org/Disaster%20Vulnerability%20Assessment.pdf>

A timeline of major disasters that affected Meghalaya during 2000-2025 is shown in the figure below:

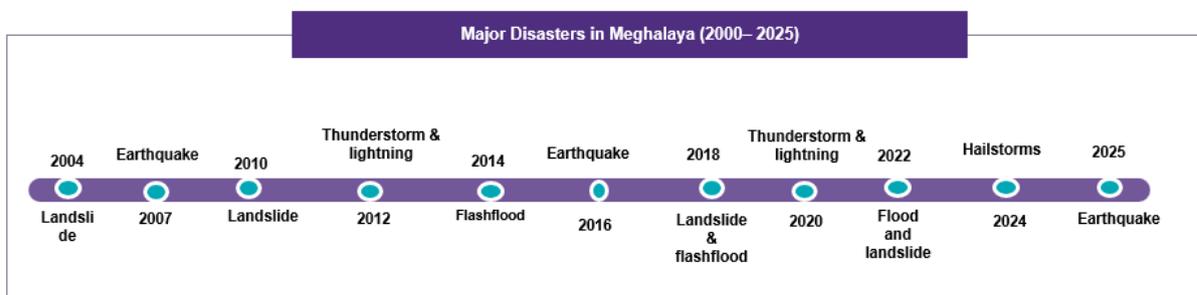


Figure 17: Timeline of Major Disasters in Meghalaya (2000-2025)

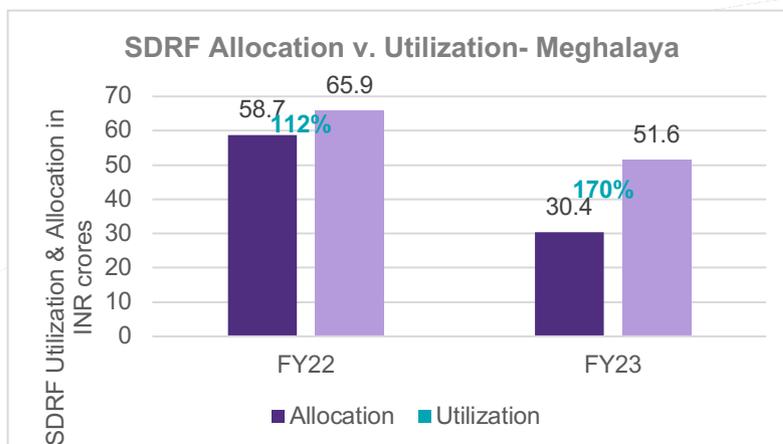
Implementation of FFC Recommendations on DRM

Meghalaya was allocated a total SDRMF of INR 403 crores for the FY22 - FY 26 period. This includes INR 322 crores (80%) for SDRF and INR 81 crores (20%) for SDMF.

Ranked 26th on the DRI, Meghalaya ranks 23rd among the 28 States in terms of fund allocation. The State gets a 90% central share for both SDRF and SDMF due to special category status.

SDRF

During FY22, the total SDRF allocation was INR 58.7 crore and the utilization was INR 65.9 crore, which was a 112% fund utilization. FY23 also witnessed 170% utilization of the SDRF, primarily towards managing flood and landslide disasters in the State.



NDRF

As per available information on public domain, the State has not received any grant from the Central Government towards NDRF.

SDMF

The State Government has created the SDMF as per the notification issued on 2nd March 2022. During FY23, the State Government did not receive any funds from the Central Government towards the SDMF. However, the SDMF allocation received from the Central Government for FY22 of INR 14.66 crores were transferred by the State Government in FY23 to the SDMF budget head.

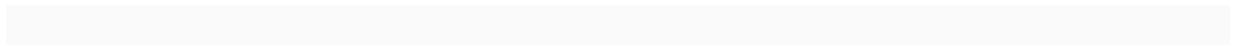
NDMF

An allocation of INR 250 crores is earmarked for Meghalaya under the 'Managing Seismic & landslide risk' sub-window. However, Meghalaya has not availed allocations under the NDMF.

In February 2025, the Government of India has approved the National Landslide Risk Mitigation Project, with a financial outlay of INR 1000 crore. This project aims to benefit 15 landslide-prone States including Meghalaya, and will be funded by the NDMF.

The Government of India has also approved a financial package of INR 3027.86 crore to enhance disaster mitigation across various States focuses on lightning safety, drought mitigation and forest fire risk management. Meghalaya is among the 19 States selected for the Mitigation Scheme for Forest Fire Risk Management. Under this scheme, Meghalaya will receive support for forest fire prevention, firefighting capacity building, fire response preparedness, and post-fire recovery assessments.

Also, as part of the Lightning Safety Mitigation Project, Meghalaya will receive funds from the NDMF to address severe lightning risks:



6. Case Study: Odisha

Demographic & Socio-economic Profile

Odisha is India's 8th largest State by area with an area of 155,707 sq. km., and the 11th largest by population, located on the eastern coast of India. Odisha's population was 4.19 crores as per Census 2011, with a population density of 269 people per sq.km. Around 83.3% of the State's population lives in rural areas. Odisha has a literacy rate of around 73% and a sex ratio of 979 females for every 1000 males²³.

Odisha has the third largest population of Scheduled Tribes in the country, with 17% of the population belonging to the ST category. 22% of the population belong to Scheduled Castes category. According to the NITI Aayog, Odisha is one of the States which showed the steepest decline in poverty; the multi-dimensional poverty in Odisha has declined to around 15% in 2019-21, however the southern and western districts of the State have a higher rate of poverty when compared to the rest of the State²⁴. Odisha is ranked 7th in Child Vulnerability Index and 8th in Gender Vulnerability Index.

Risk Profile

Owing to its geo-climatic conditions, location along the Bay of Bengal and a 480 km long coastline, Odisha is highly prone to multiple natural disasters such as cyclones, droughts, and flash floods and landslides caused due to torrential rain. There have also been increasing instances of casualties caused due to lightning strikes, and heatwaves.

Between 1996 and 2019, Odisha has been impacted by floods in 13 years, droughts in 8 years and cyclones in 5 years²⁵. Over 68% of Odisha's land area is vulnerable to drought²⁶. The major disasters that have impacted Odisha in the last 2 decades are depicted below.

Odisha: Risk Profile

- DRI Score: **0.90**; DRI Rank **#1**
- **#4** in Composite Hazard Index
- **#1** in Heatwave Index
- **#2** in Cyclone Hazard Index
- **#3** in Lightning Hazard Index
- **#6** in Tsunami Hazard Index
- **#6** in Coastal Erosion
- **#10** in Flood Vulnerability Index
- **#4** in Depletion of Mangroves

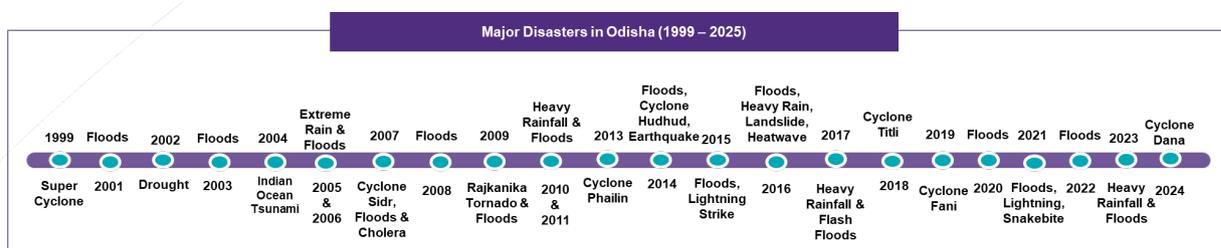


Figure 20: Timeline of Major Disasters in Odisha

²³ [Census 2011](#)

²⁴ Multidimensional Poverty in India since 2005 -06, NITI Aayog & UNDP India (https://www.niti.gov.in/sites/default/files/2024-01/MPI-22_NITI-Aayog20254.pdf)

²⁵ [https://cidm.in/presentations/Bishnu%20Pada%20DM%20in%20Odisha%20\(2\).pdf](https://cidm.in/presentations/Bishnu%20Pada%20DM%20in%20Odisha%20(2).pdf)

²⁶ [International Journal of Engineering and Technology \(June 2024\)](#)

The incidence of cyclones has been increasing in frequency and severity over the years due to the impact of rising temperatures in the Bay of Bengal due to climate change. However, due to the proactive measures by the government, institutional machinery and civil society in Odisha, the State is well-equipped to address the impacts of such hazards, thus reducing the State's vulnerability to the same.

Implementation of FFC Recommendations on DRM

As per the DRI-based methodology followed by the FFC, Odisha received the highest DRI score of 90, and ranks 4th in terms of allocation. Odisha has been provided an allocation of INR 11819 crores under the SDRMF. This includes the Central Government share of 75% (INR 8865 crores) and the State share of 25% (INR 2954 crores).

SDRF

Odisha's SDRF utilization between FY22 and FY25 is 47.74%. The SDRF utilization is high in FY22, when the State has incurred a utilization percentage of 112.83%, due to the impact of Cyclone Yaas and the COVID-19 Pandemic.

The utilization in FY23 and FY24 is lower at 10.45% and 19.88% respectively. This lower utilization of SDRF may be attributed to multiple reasons, some of them being (i) lower incidence of disaster events during these years, (ii) State's investment in disaster preparedness and risk reduction over the years, including the Early Warning System 'SATARK', (iii) GIS cell also functioning as a Decision Support System for DRM, (iv) Community-based Disaster Risk Management including development of Village Disaster Management Plans, among others.

Odisha has been proactive in investing unutilized funds under SDRMF, as per the provisions of the SDRF & SDMF guidelines. This indicates Odisha's efficiency in utilization of the DRM funds. The investment from SDRF during FY22, FY23 and FY24 are provided in the table below.

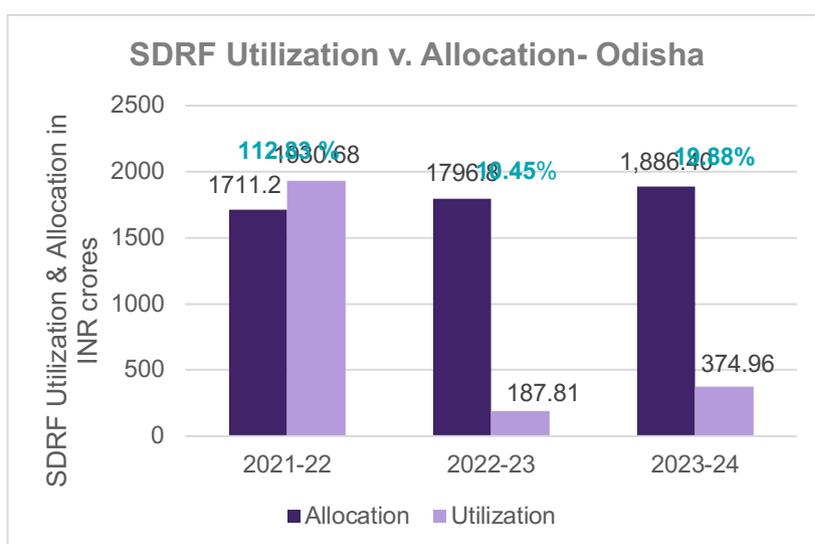


Figure 21: SDRF Allocation vs Utilization - Odisha

FY	SDRF Investment
2021-22	INR 2433.75 crores
2022-23	INR 3197.74 crores
2023-24	INR 5008.24 crores

Table 9:SDRF Investment- Odisha

NDRF

Odisha has availed NDRF allocation for natural disasters in FY22 and FY25. In FY22, Odisha was impacted by Cyclone Yaas, which resulted in the loss of 3 lives, damages to 18094 houses, 5672.99 ha of crop area, 72 cattle, and 40 boats, as per the memorandum submitted by the State government to the Centre²⁷. On the basis of the IMCT's findings, a NDRF of INR 500 crores was provided to Odisha. This also corresponds to the 112% utilization of SDRF in FY22. In FY25, an allocation of INR 255.24 crores was provided to the State in the aftermath of Cyclone Dana, on the basis of assessment by the IMCT²⁸.

Under the sub-window for Preparedness and Capacity Building, Odisha was provided an allocation of INR 45.086 crores for 'Modernization of Fire services'.

SDMF

Odisha was one of the first States to establish the SDMF, as per notification issued in September 2021. The overall utilization under SDMF between FY22 and FY24 is 40.16% with zero utilization in FY 22, ~68% in FY23 and ~50% in FY 24.

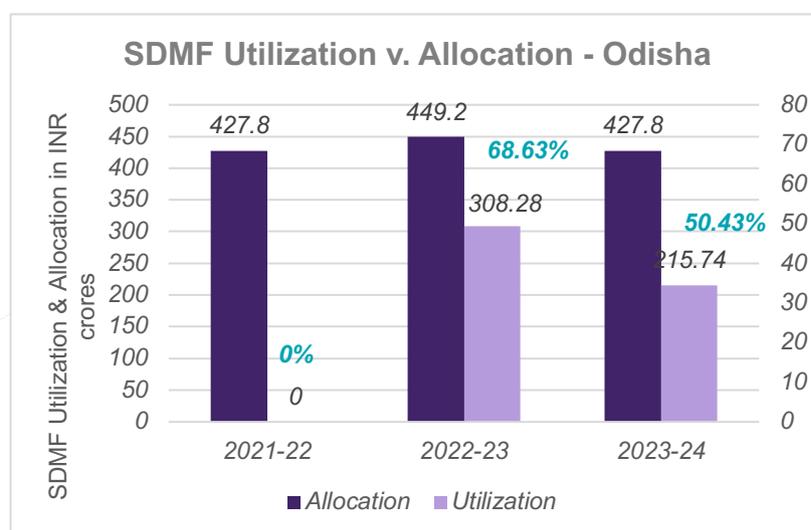


Figure 22: SDMF Utilization vs Allocation - Odisha

Odisha has also invested a portion of the unutilized allocation under the SDMF. The investment from SDMF during FY23 and FY24 is mentioned in the table below.

²⁷ [Loss of Life and Property due to Cyclone Yaas](#)

²⁸ [Funds Released from SDRF and NDRF \(March 2025\)](#)

FY	SDMF Investment
2022-23	INR 639.81 crores
2023-24	INR 1660.45 crores

Table 10: Investment of SDMF funds in Odisha

NDMF

Odisha has been provided an earmarked allocation of INR 100 crores for 'Catalytic Assistance to develop district level drought mitigation plans' under the NDMF. This allocation has not been utilized.

7. Case Study: Uttarakhand

Demographic and socio-economic profile

Uttarakhand, a northern State of India, is situated on the southern slopes of the Himalayas. According to the Census 2011, Uttarakhand's population stood at 101 million, with an average density of 189 people per sq.km²⁹. With an area of 53483 square kilometers, the State is divided into two regions - Garhwal and Kumaun, and comprises 13 districts.

The State has a sex ratio of 963 females per 1000 males. The overall literacy rate is 79.63%, with male literacy at 88.33% and female literacy at 70.70%. The proportion of people living below the poverty line is around 9.4%³⁰.

Risk Profile

Uttarakhand is vulnerable to multiple hazards, including earthquakes, landslides, flash floods, avalanches, dam bursts, and droughts. The State is situated in the seismic gap of the 1934 Bihar–Nepal earthquake and the 1905 Kangra earthquake. It is classified within Zones IV and V, indicating that it lies in the highest seismic risk areas. Major earthquakes in Uttarakhand include the Uttarkashi Earthquake (1991) that affected a population of about 307,000 in 1,294 villages and damaged around 42,400 houses³¹. The Chamoli Earthquake (1999) damaged approximately 50,000 houses and impacted over 2,000 villages³².

Uttarakhand: Risk Profile

- DRI Score: **0.50**; DRI Rank **#21**
- **#6** in Composite Hazard Index
- **#2** in Earthquake Hazard Index
- **#2** in Landslide Hazard Index
- **#2** in Avalanche Hazard Index
- **#4** in Drought Hazard Index
- **#4** in Cold wave Hazard Index

Nearly every year, Uttarakhand experiences one or more major landslides. These landslides often result in loss of life, and the destruction of homes, roads, communication networks, and agricultural land, among other severe consequences. Major landslides of Uttarakhand include Malpa Landslide (1998) in Pithoragarh district that resulted in the deaths of approximately 255 people, Kedarnath landslide (2013) and Chamoli Landslide (2021)³³.

Flash floods are also major hazards in Uttarakhand. Major flash floods include the Kedarnath flash flood (2013) that resulted in the deaths of approximately 6,000 people and the destruction of around 3,077 houses, and Uttarkashi flash flood (2021) that affected 143 households in four villages, resulting in the deaths of 22 people and damage to 19 houses³⁴.

Avalanches and forest fires are other major hazards that affect Uttarakhand. Between November 2024 and June 2025, around 11,256 incidents of forest fire were reported across 11 of the State's 13 districts. These fires caused extensive damage, destroying over 1,000 hectares of forest and resulting in the deaths of five people.

²⁹ [Uttarakhand Population 2025](#)

³⁰ [Poverty and Social Monitoring Survey. Analysis of Data and Preparation of report in Uttarakhand | Institute for Human Development](#)

³¹ <https://www.nicee.org/Uttarkashi.php>

³² https://www.nicee.org/eqe-iitk/uploads/EQR_Chamoli.pdf

³³ [Detailed report UK Disaster.pdf](#)

³⁴ [Environmental and economic impact of cloudburst-triggered debris flows and flash floods in Uttarakhand Himalaya: a case study | Geoenvironmental Disasters | Full Text](#)

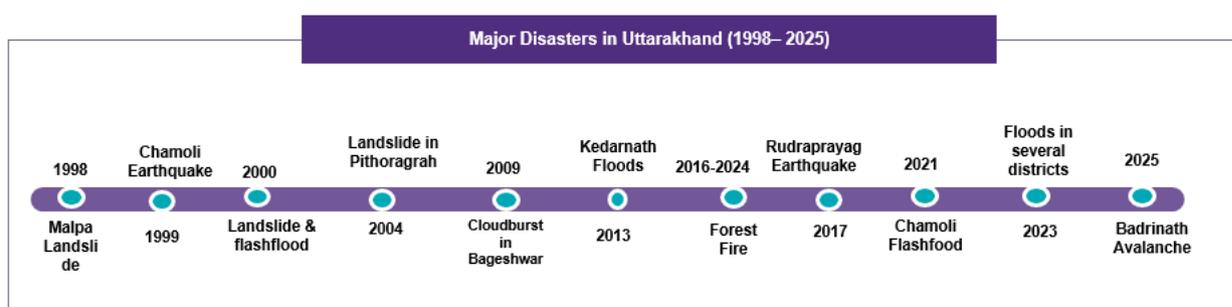


Figure 24: Timeline of Major Disasters in Uttarakhand (1998-2025)

Implementation of FFC Recommendations on DRM

The State of Uttarakhand was allocated a total SDRMF of INR 5752 crores for the period FY22 - FY26. This includes INR 4602 crores (80%) for response activities and INR 1150 crores (20%) for mitigation activities.

Ranked 21st on the DRI, Uttarakhand ranks 12th among the 28 States in terms of fund allocation. The State

gets a 90% central share for both SDRF and SD MF due to special category status.

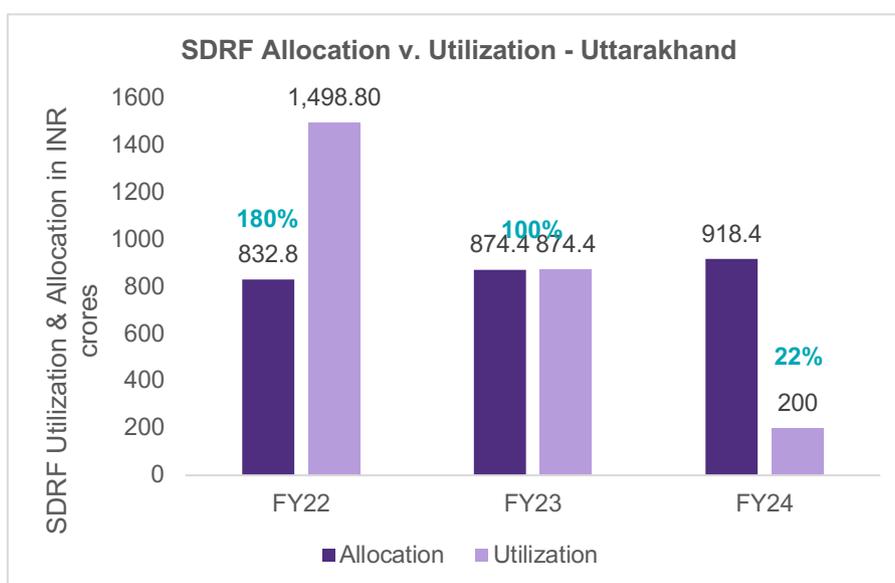


Figure 25: SDRF Allocation vs Utilization- Uttarakhand

SDRF

SDRF³⁵ is being utilized to provide relief assistance to disaster-affected people according to the prescribed standards, and funds are being allocated to line departments for the reconstruction of departmental assets. Under the Capacity Building and Preparedness window, training programs, workshops, and mock drills are being conducted for public awareness in view of disaster prevention. According to data shared by the State, 22.45% of SDRF was spent on Relief & Response, 18.17% on Recovery & Reconstruction, and 2.14% on Preparedness & Capacity Building during 2021-24.

³⁵ The data received from the state government does not align with the data reported in CAG reports. For example, as per the data provided by the State Government, the utilization for FY23 is INR 503.6 crores. The official mentioned that the remaining funds are invested by the State through Commercial Banks. However, this has not been accounted for in the CAG Audit. Closer examination of the same is required.

In FY 22, Uttarakhand achieved 180% utilization of the SDRF, a key reason being the State's response to the COVID-19 pandemic. Also, in October 2021, Uttarakhand had experienced severe landslides and flash floods, causing significant damage across 6 districts.

The following financial year (FY23) also witnessed 100% utilization of SDRF. FY24 witnessed only 22% utilization of the SDRF due to low occurrence of major disasters; also, the planning for expenditures under the Recovery and Reconstruction sub-financing window took time due to the delay in issue of guidelines.

NDRF

Till date, the State has not availed NDRF, since it could draw from the substantial contribution (90%) of SDRF provided by the central government. Also, the requirement for additional assistance was limited since disaster incidence was low.

SDMF

The SDMF in Uttarakhand is used for various activities aimed at reducing losses to human lives.

Out of the total allocated SDMF of INR 656.2 crores for the period FY22 - FY24, around INR 426.7 crores (65%) of the fund has been utilized for various mitigation activities such as (a) stabilization of the Balia Nala slope in Nainital, (b) landslide mitigation work between Girls Hostel of DSB College, Thandi Sadak Nainital, (c) flood protection work of village Malana along both banks of Kothhigad in Mori block of district Uttarkashi, (d) flood protection works & anti-erosion works at Shipra River in Khairna Garampani Market, Nainital, (e) vetting and mathematical modelling regarding protection works against erosion of the left bank of Alaknanda River at Joshimath, among others.

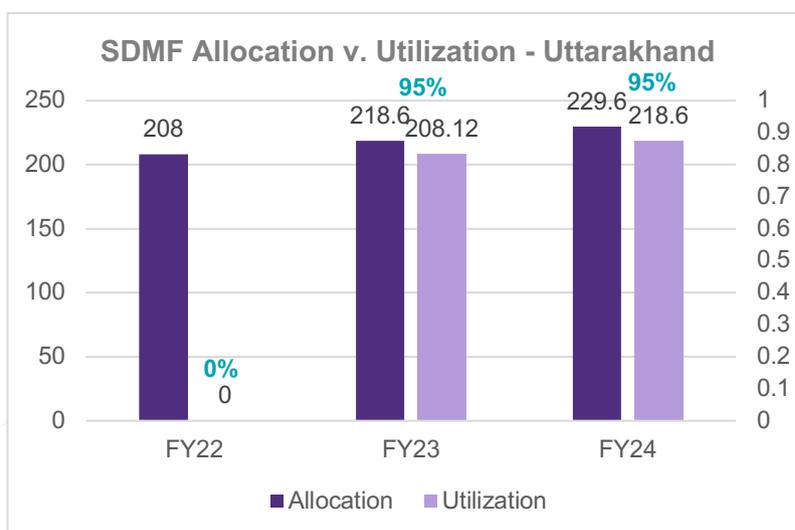


Figure 26: SDMF Allocation vs Utilization- Uttarakhand

In FY22, there was zero utilization of the fund as the guidelines had not been issued at that time. A portion of the FY22 fund was subsequently utilized in the following financial year. In FY23 and FY24, the utilization was 95%. Based on the demand for various critical mitigation activities, funds from previous accounts are being adjusted accordingly.

NDMF

An allocation of INR 250 crores was earmarked for Uttarakhand under the 'Managing Seismic & landslide risk' sub-window. However, Uttarakhand has not availed allocations under the NDMF.

In February 2025, the Government of India has approved the National Landslide Risk Mitigation Project, with a financial outlay of INR 1000 crore. INR 139 crores have been allocated to Uttarakhand and will be funded by the NDMF.

Annexure 4: Global good practices for DRM resource allocation

To comprehensively review and gain an understanding of the various best practices across the globe and adopt relevant lessons for India, case studies on successful disaster risk management financing strategies were gathered for ten countries viz. Mexico, Philippines, Turkey, USA, Indonesia, Brazil, Germany, Morocco, Australia, and New Zealand. These countries represent a diverse mix of both developed and developing nations, each characterized by a high level of vulnerability to natural disasters. The selection of these case studies is guided by the objective of reviewing a wide range of approaches and financial mechanisms employed by these nations to mitigate and respond to disaster risks effectively. By examining these experiences, the review aims to extract key insights that can inform and strengthen India's own disaster risk management financing model.



1. MEXICO- *Fondo de Desastres Naturales (FONDEN)*

Mexico's disaster risk financing model offers a strong, structured approach to pre-disaster financial planning. A key component of this model was the establishment of the Fund for Natural Disasters (FONDEN) in 1996.

FONDEN is a dedicated financial vehicle designed to ensure that the Government of Mexico has adequate financial capacity to respond to natural hazards, while facilitating rapid allocation of funds for emergency response and reconstruction efforts. While FONDEN does not rely solely on a pre-determined Disaster Risk Index (DRI) for automatic ex-ante recovery allocations, it incorporates pre-arranged financial instruments, such as contingent credit lines and insurance, to enhance financial preparedness. There is also a Federal Stabilization Fund that can be provided by the Federal Government during significant economic downturns or crises. This fund was used during the 2009 financial crisis and the COVID-19 Pandemic.

FONDEN's funding is derived from the Federal Budget. Legally, FONDEN and its associated funds are guaranteed at least 0.4% of the annual federal budget, equating to around \$800 million. This allocation also incorporates any leftover funds from the previous fiscal year, ensuring a consistent flow of resources for FONDEN. Although the federal government is the main source of funding for FONDEN, State governments also contribute significantly specifically to post-disaster reconstruction. Many Mexican States also have their own disaster contingency funds to finance immediate needs at the time of a disaster, complementing FONDEN's efforts. Further, the States have the autonomy to manage their contingency funds.

At the municipal or regional level, FONDEN aids in creating risk transfer strategies and securing insurance to safeguard local assets. This encompasses funding the rebuilding of public infrastructure and affordable housing, as well as assisting States in establishing their own risk transfer methods.

FONDEN employs a risk-layering approach to manage disaster related financial risks. For high frequency-low severity events, it utilizes budgetary allocations. For less frequent but more severe events, it leverages market-based risk transfer instruments such as insurance and catastrophic bond.

Mexico also issued the first-ever sovereign catastrophe bond in 2006; aiding transferring risk to the capital market and ensuring quick liquidity after major disasters including earthquakes and hurricanes. The government has also structured pre-approved funding mechanisms like insurance policies with parametric triggers, to help ensure rapid fund disbursement. Unlike traditional insurance, parametric insurance provides automatic payouts when certain predefined conditions, like wind speed, earthquake magnitude, or rainfall levels, are met. Few initiatives include Quintana Roo Reef Protection and Mexican Reef Protection Programs.

Source: [GFDRR \(2012\)](#), [NFCC \(2012\)](#)

2. INDONESIA - Disaster Response Emergency Fund (DREF)

The Government of Indonesia has developed a comprehensive DRFI strategy to protect its assets and communities from natural hazards. The strategy includes funds and mechanisms such as disaster response emergency fund, disaster pooling funds, budget allocations and insurance instruments to ensure rapid response and recovery.

The disaster pooling fund accumulates financial resources from diverse sources such as budget allocations, private sector contributions, and international aid to reduce the burden on the national budget at the response time.

The **Disaster Response Emergency Fund (DREF)** is activated based on the **Disaster Risk Index (DRI)** of the local level. The risk scores are periodically updated based on changing vulnerabilities and guide local government budget allocations. The DRI of Indonesia considers 3 parameters:

- (i) **Hazard:** Determined by exposure of population and capital (GDP) to 9 major hazards - Floods, Earthquake, Landslide, Volcanic Eruption, Wildfire, Drought, Extreme Weather, Tsunami & Flash Floods
- (ii) **Vulnerability:** Determined by Population Pressure, Gender Inequality, Information Access Vulnerability, Economic Constraints, Environmental Stress, Vulnerable Health Status, Clean Water Access Vulnerability
- (iii) **Capacity:** Economic Capacity, Governance, Environmental Capacity, Healthcare Capacity, Transportation Capacity, Communication Capacity, Energy Capacity

Indonesia's Pooling Fund Bencana (PFB) operates at the national level, without direct fiscal devolution to provinces. It is designed as a multi-year fund, ensuring financial continuity for disaster response and recovery. The fund incorporates parametric insurance and sovereign risk transfer instruments, allowing for faster and more predictable post-disaster financing. Indonesia's public asset insurance program utilizes State-owned assets to ensure that funds are available for rapid repair and reconstruction following a disaster.

Source: [APEC \(2018\)](#), [WBG \(2024\)](#), [Pacific Disaster Centre \(2020\)](#)

3. AUSTRALIA - Disaster Ready Fund

Australia faces increasing losses from natural disasters. The Government of Australia recognized that investment in mitigation and resilience is required to reduce damages and losses due to disasters.

In 2022, the Australian Government established the Disaster Ready Fund (DRF). DRF is an emergency fund drawn for natural disaster resilience and risk reduction. The Australian Government provides up to \$200 million AUD per year, for disaster risk reduction and resilience initiatives. The DRF Amendment Act also transferred responsibility for fund expenditure to the National Emergency Management Agency and streamlined certain administrative arrangements in relation to transfers from the fund. Australia contributes to global pooled funding mechanisms, such as the UN's Central Emergency Response Fund and the International Federation of Red Cross and Red Crescent Societies, Disaster Relief Emergency Fund, UNDRR and the World Bank's Global Facility for Disaster Reduction and Recovery.

Through funding disaster resilience projects, Disaster Ready Fund (DRF) in Australia aims (a) to increase the understanding of natural hazard disaster impacts, (b) to increase the resilience, adaptive capacity and preparedness of governments, community service organizations and affected communities to minimize the potential impacts of natural hazards and avert disasters and (c) to reduce the exposure, risk and severity of natural hazard, reducing the recovery burden for governments.

Disaster Ready Fund is delivered by the Australian Government in partnership with State and territory governments. State and territory governments are expected to work closely with key stakeholders. The Australian Disaster Resilience Index revealed a non-uniform distribution of capacity for disaster resilience around Australia. The DRF Act provides **Investment Mandate; the responsible ministries are required to issue at least one investment mandate to the Future Fund Board** in relation to the DRF.

Source: [Australian Government Department of Foreign Affairs and Trade](#)

4. MOROCCO- *Fund for the Fight against Natural Catastrophes (FLCN), Public Solidarity Fund (FSEC)*

Morocco's disaster management funding relies on a **dual public-private mechanism**, including the **Fund for the Fight against Natural Catastrophes (FLCN)**, a national resilience fund, **and a Public Solidarity Fund (FSEC)** for vulnerable households, alongside private insurance schemes.

Fund for the Fight against Natural Catastrophes (FLCN): This fund is dedicated to boosting disaster preparedness and response capabilities. It backs projects focused on disaster risk reduction and building resilience. The fund has co-financed over 230 projects, amounting to \$304 million in investments. It collaborates with national and local agencies to enhance flood risk management and other disaster preparedness strategies. These initiatives have positively impacted approximately 400,000 direct beneficiaries and over 33 million indirect beneficiaries throughout Morocco.

The **Public Solidarity Fund (FSEC)** aims to offer financial assistance and support following natural disasters. It supplements private insurance by providing coverage for uninsured groups, particularly poor and vulnerable households. The fund gathers reserves from para-fiscal tax revenues and triggers insurance payouts for disaster-related compensation. As an integral part of Morocco's dual public-private financial protection strategy, it includes catastrophe risk insurance. In response to the 2023 Al-Haouz earthquake, the FSEC recently mobilized \$275 million.

The development of a National Disaster Risk Management (DRM) strategy supported structural risk reduction investments for more than 174,000 beneficiaries, insuring close to 9 million people against bodily injury in catastrophic events. Morocco is exposed to earthquakes, tsunamis, floods, and droughts and Morocco Natural Hazards Probabilistic Risk Assessment (MnhPRA), a catastrophe risk model, allows estimation of the economic impact of disasters. Since 2021, the FSEC has been conducting additional disaster risk modelling efforts to estimate the financial costs of earthquake, flooding, and landslides. FLCN in Morocco is a post-disaster reconstruction fund, co-financing disaster risk reduction and preparedness projects at the local level, with World Bank support.

Source: [World Bank \(2022\)](#)

5. BRAZIL – National Disaster Risk Financing and Insurance Strategy

Extreme weather events over the years have caused several major disasters in Brazil. The increased number of recorded human and economic losses and the significant rise in occurrence of disaster events have led to the prioritized strengthening of DRM practices.

Currently, the financial management of natural disasters in Brazil is not guided by an integrated disaster risk financing and insurance strategy at a national level. The Government of Brazil primarily relies on ex-post disaster risk financing mechanisms, since annual budgeting is generally insufficient to meet disaster response requirements and ex-post budgetary reallocation has been the common budgetary practice in case of incidence of disasters. While there is no national strategy for disaster risk financing and insurance, some States have established their own disaster funds to address delays caused by the bureaucratic bottlenecks in obtaining the federal government funding for recovery and reconstruction after disasters.

Source: [G20 Brasil, CDRI \(2024\); Disaster risk management policies in Brazilian municipalities \(2025\)](#)

6. EUROPEAN UNION – European Regional Development Fund, European Agricultural Fund for Rural Development

The European Union has adopted several additional funding methods to support disaster mitigation and climate change adoption in its member States.

The European Regional Development Fund (ERDF) supports regions with development deficits and structural problems. The fund can be used by the Member States for climate change adaptation, and disaster prevention and response. All the EU Member States contribute to ERDF according to the GDP per capita. The ERDF provides funding to public and private bodies in all EU regions to reduce economic, social and territorial disparities. The Fund supports investments through dedicated national or regional programs. **The European Agricultural Fund for Rural Development (EAFRD)** supports investments in sustainable and crisis-resistant agriculture, climate protection, flood and coastal protection measures. EAFRD funds through EU's Common Agricultural Policy. The allocation of funds is managed at national or regional levels, with the European Commission approving and monitoring Rural Development Programs.

Source: [German Strategy for Strengthening Resilience to Disasters](#)

7. NEW ZEALAND – Social Protection Strategy

New Zealand follows a multi-level government coordination fostering sustainable and localized disaster risk management. The Ministry of Social Development (MSD) of New Zealand provided social protection to its vulnerable population, through a **tailored mechanism distribution of financial relief for communities and small-and-medium enterprises**.

For emergency management, National Emergency Management Agency (NEMA) in New Zealand operates as a channel between central and local government, and administers financial support to local government to restore local public services and emergency response capacity during emergencies. NEMA supports the response and recovery depending on the emergency. The Earthquake Commission (EQC) is a New Zealand Government entity providing insurance to residential property owners to cover the first loss for damage to homes caused by natural disasters, up to NZD\$ 150,000, with private insurers topping up payments in accordance with people's insurance policies.

Source: [UNDRR \(2021\)](#)

8. TURKEY- Turkish Catastrophic Insurance Pool (TCIP)

Turkey, a country highly vulnerable to earthquakes, has implemented effective disaster risk management financing initiatives including the Turkish Catastrophic Insurance Pool (TCIP). The TCIP is a public-private partnership designed to provide financial protection to homeowners against earthquake damage and reduce government's fiscal burden. The insurance leverages risk-based pricing and is backed by international insurance and capital markets. This model has helped improve disaster resilience by ensuring quick payouts and promoting earthquake-resistant construction. Turkey has also taken steps to mainstream Disaster Risk Reduction and Climate Change Adaptation into sectoral investment planning.

Source: [World Bank \(2011\)](#)

9. USA - Disaster Relief Fund

The Disaster Relief Fund (DRF) managed by FEMA covers a wide range of disaster-related expenses, including public infrastructure repairs, individual assistance and mitigation programs. Funds are pre-authorized and released swiftly after a presidential disaster declaration, enabling rapid deployment. The DRF operates with a high degree of flexibility, allowing FEMA to efficiently allocate the resources across various disaster scenarios. Also, the States have significant autonomy in managing funds, with FEMA covering up to 75% of eligible disaster costs, while States/local governments cover the remainder ensuring shared financial responsibility.

FEMA also has a significant focus on funding pre-disaster mitigation projects aimed at reducing future disaster risks.

Source: [Congressional Research Service \(2014\)](#)

10. PHILIPPINES- National Disaster Risk Reduction and Management Fund (NDRRMF), the Local Disaster Risk Reduction and Management Fund (LDRRMF), Philippine City Disaster Insurance Pool (PCDIP), Contingent credit lines

The Philippines has developed a comprehensive Disaster Risk Financing and Insurance (DRFI) strategy that operates across sovereign, and local household levels to enhance its financial resilience against natural hazards.

At the sovereign level, the National Disaster Risk Reduction and Management Fund (NDRRMF) supports disaster risk reduction, mitigation, preparedness and response activities. The NDRRMF is primarily funded through the national budget. Annually, a designated portion is allocated to ensure that the fund has adequate resources for the activities. A segment of the NDRRMF is reserved as a Quick Response Fund, enabling swift deployment to meet urgent needs in the aftermath of a disaster. The government has also leveraged contingent credit lines [such as Catastrophe Deferred Drawdown Option (CAT DDO) - an IBRD Flexible Loan Product] to ensure swift liquidity post a disaster.

At the local level, Local Government Units (LGUs) play a crucial role in service delivery, disaster risk management and climate adaptation. The DRRM Act 10121 empowers LGUs and respective communities to establish a Local Disaster Risk Management Office and allocate 5% of the estimated revenue to the Local Disaster Risk Reduction and Management Fund (LDRRMF). Further, the Philippine City Disaster Insurance Pool (PCDIP) leverages a parametric insurance mechanism by pooling risk among the cities to ensure quick payouts post a disaster. At the household level, microinsurance and social protection programs are being widely used.

Source: [GFDRR](#), [ADB \(2018\)](#), [APEC \(2015\)](#)

Annexure 5: Data Collection Checklists

Financing Window	FY21-22				FY22-23				FY23-24				FY24-25				FY25-26				
	Fund Allocation		Fund Utilization		Fund Allocation		Fund Utilization		Fund Allocation		Fund Utilization		Fund Allocation		Fund Utilization		Fund Allocation		Fund Utilization		
	Union Share	State Share	Union Share	State Share	Union Share	State Share	Union Share	State Share	Union Share	State Share	Union Share	State Share	Union Share	State Share	Union Share	State Share	Union Share	State Share	Union Share	State Share	
NDMF																					
NDRF																					
Total (NDRMF)																					
SDMF																					
SDRF																					
Total (SDRMF)																					

	Allocation under NDRF					Allocation under SDRF			Allocation under NDMF				Allocation under SDMF
FY	Response & Relief	Recovery & Reconstruction	Preparedness & Capacity Building	Resettlement of displaced people affected by erosion	Expansion & modernization of fire services	Response & Relief	Recovery & Reconstruction	Preparedness & Capacity Building	Catalytic Assistance	Reducing risk of Urban Flooding	Managing Seismic & landslide risk	Mitigation measures to prevent erosion	
FY21-22													
FY22-23													
FY23-24													
FY24-25													
TOTAL ALLOCATION													

	Utilization under NDRF					Utilization under SDRF			Utilization under NDMF				Utilization under SDMF
	Response & Relief	Recovery & Reconstruction	Preparedness & Capacity Building	Resettlement of displaced people affected by erosion	Expansion & modernization of fire services	Response & Relief	Recovery & Reconstruction	Preparedness & Capacity Building	Catalytic Assistance	Reducing risk of Urban Flooding	Managing Seismic & landslide risk	Mitigation measures to prevent erosion	
FY21-22													
FY22-23													
FY23-24													
FY24-25													
TOTAL UTILIZATION													

Disaster Risk Management Financing in India Review

Questionnaire for State Consultations

Name of Department/ Organization	
Name of Respondent	
Designation of Respondent	

Sl. No.	Questions
1	<p>National Disaster Risk Management Fund (NDRMF) and State Disaster Risk Management (SDRMF)</p> <p>Please provide your views on the below: -</p> <ul style="list-style-type: none"> • To what extent has the new methodology succeeded in addressing the actual needs for DRM Financing in your State? • To what extent do State fiscal capacities impact the utilization and implementation of FFC grants? How has your State's fiscal status impacted the utilization and implementation of FFC grants? <ul style="list-style-type: none"> ○ <i>Income disparities - Wealthier States like Gujarat, and Maharashtra have greater revenue capacity while poorer states like Bihar require more financial assistance.</i> ○ <i>Debt and Fiscal Deficit Levels - States with higher debt burdens (like Punjab and Kerala) may struggle to contribute State shares/contributions for availing grants under NDRF and NDMF</i> • To what extent has the 80:20 proportion for reduction and mitigation funds met the actual DRM Financing needs of your States? • Any other views/observations/ feedback?
	Response:
2	<p>National Disaster Response Fund (NDRF)</p> <p>In the context of your State, please provide your views on the below: -</p> <ul style="list-style-type: none"> • What is the extent and nature of utilization of NDRF funds? • What were the enablers to utilization? • What were the barriers and challenges to utilization? • What were the activities financed through NDRF? What was the impact achieved from undertaking these activities? • Has the NDRF realistically supported your State in meeting State's needs under the different disaster management stages (<i>relief, response, reconstruction, recovery, etc.</i>)? • How can the allocation and utilization of NDRF be improved? What are your suggestions on the different interventions (additional resources, policy actions, institutional reforms, capacity building, technology, etc.) required for strengthening the utilization and implementation of NDRF? • Any other views/observations/ feedback?
	Response:
3	<p>State Disaster Response Fund (SDRF)</p> <p>In the context of your State, please provide your views on the below: -</p> <ul style="list-style-type: none"> • What is the extent and nature of utilization of SDRF funds? • What were the enablers to utilization? • What were the barriers and challenges to utilization? • What were the activities financed through SDRF? What was the impact achieved from undertaking these activities? • Has the SDRF realistically supported your State in meeting State's needs under the different disaster management stages (<i>relief, response, reconstruction, recovery, etc.</i>)? • How can the allocation and utilization of SDRF be improved? What are your suggestions on the different interventions (additional resources, policy actions, institutional reforms, capacity building, technology, etc.) required for strengthening the utilization and implementation of SDRF? • Any other views/observations/ feedback?
	Response:
4	<p>National Disaster Mitigation Fund (NDMF)</p>

Sl. No.	Questions
	<p>In the context of your State, please provide your views on the below: -</p> <ul style="list-style-type: none"> • What is the extent and nature of utilization of NDMF funds? • What were the enablers to utilization? • What were the barriers and challenges to utilization? • What were the activities financed through NDMF? What was the impact achieved from undertaking these activities? • Has the NDMF realistically supported your State in meeting State's needs under the different disaster management stages (<i>relief, response, reconstruction, recovery, etc.</i>)? • How can the allocation and utilization of NDMF be improved? What are your suggestions on the different interventions (additional resources, policy actions, institutional reforms, capacity building, technology, etc.) required for strengthening the utilization and implementation of NDMF? • Any other views/observations/ feedback?
	Response:
5	<p>State Disaster Mitigation Fund (SDMF)</p> <p>In the context of your State, please provide your views on the below: -</p> <ul style="list-style-type: none"> • What is the extent and nature of utilization of SDMF funds? • What were the enablers to utilization? • What were the barriers and challenges to utilization? • What were the activities financed through SDMF? What was the impact achieved from undertaking these activities? • Has the SDMF realistically supported your State in meeting State's needs under the different disaster management stages (<i>relief, response, reconstruction, recovery, etc.</i>)? • How can the allocation and utilization of SDMF be improved? What are your suggestions on the different interventions (additional resources, policy actions, institutional reforms, capacity building, technology, etc.) required for strengthening the utilization and implementation of SDMF? • Any other views/observations/ feedback?
	Response:
6	<p>Interchangeability and Reallocation Flexibility</p> <p>In this context, please provide your views on the below: -</p> <ul style="list-style-type: none"> • Has your State utilized the flexibility of 10% reallocation under SDRF and NDRF? What were the enablers to utilization? What were the barriers and challenges to utilization? • How can the guidelines on interchangeability and reallocation be modified to accommodate the evolving requirements for DRM Financing?
	Response:
7	<p>Cost-sharing arrangements between Centre and State for NDRF and NDMF</p> <p>In this context, please provide your views on the cost-sharing arrangements, including (but not limited to) the following: -</p> <ul style="list-style-type: none"> • To what extent will State fiscal capacities affect the State's position to avail funds under NDRF and NDMF? For example – poorer States may require larger quantum of funds but may struggle to contribute to State shares. • Any suggestions for revising/re-aligning cost-sharing arrangements?
	Response:
8	<p>Disaster Response and Mitigation Funds for Districts</p> <p>In the context of your State, please provide your views on the below: -</p> <ul style="list-style-type: none"> • What is the fund allocation methodology which has been developed in your State? • What has been the State's experience in empowering PRIs to utilize and implement FFC grants? To what extent has it improved disaster management and disaster preparedness at local level? • What were the enablers for Districts to undertake their disaster functions? • What were the barriers and challenges for Districts to undertake their disaster functions? • Any other views/observations/ feedback?
	Response:
9	<p>Disaster Response and Mitigation Funds for PRIs</p>

Sl. No.	Questions
	<p>In the context of your State, please provide your views on the below: -</p> <ul style="list-style-type: none"> • What has been the State's experience in empowering PRIs to utilize and implement FFC grants? To what extent has it improved disaster management and disaster preparedness at local level? • What were the enablers for PRIs to undertake their disaster functions? • What were the barriers and challenges for PRIs to undertake their disaster functions? • Any other views/observations/ feedback?
	Response:
10	<p>Alternate Sources of Funding</p> <p>Please provide your views on the below: -</p> <ul style="list-style-type: none"> • To what extent has your State explored alternate sources of funding? • What are some innovative financial instruments which can be used to enhance disaster risk financing in your State and in India? • Any other views/observations/ feedback?
	Response:
11	<p>Online Systems</p> <p>The FFC recommends setting up an online system for release of fund allocations, expenditures and outstanding balance for each State. It also mentions setting up a Disaster Database as a special initiative to include disaster assessments, fund allocation details, expenditures, preparedness and mitigation plans.</p> <p>Please share details of the database /portal/ systems which are being used in your State.</p>
	Response:
12	<p>Performance of Other States</p> <p>In your opinion, which are the States that have done well in utilization and implementation of FFC grant? What were their success factors?</p>
	Response:
13.	<p>Suggestions for Sixteenth Finance Commission (SFC)</p> <ul style="list-style-type: none"> • What are your recommendations for a new approach and/or methodology for DRM Financing under SFC? • How can the proposed methodology ensure that the DRI better reflects the historical disaster profile and emerging climate-induced risks? • How can allocation and utilization under SFC be improved? What are the interventions required? • Any other views/observations/ feedback?
	Response:
14.	Any other suggestions/ feedback/ views/ observations which have not been captured in the above responses.
	Response:

Annexure 6: State-level Stakeholders Consulted

Sl. No.	Name	Designation, Organization
1.	Mr. Shyamal Kshetra Gogoi	Joint Secretary, Revenue and Disaster Management Department, Government of Assam
2.	Mr. Chirag Patel	Under Secretary (Relief), Revenue Department, Government of Gujarat
3.	Mr. Shubhash Savaliya	Deputy Secretary, Commissionerate of Relief, Government of Gujarat
4.	Mr. Trivesh H Sharma	Chief Accounts Officer, Commissionerate of Relief, Government of Gujarat
5.	Mr. Sanjaysingh Rathwa	Deputy Section Officer, Commissionerate of Relief, Government of Gujarat
6.	Dr. Sekhar Lukose Kuriakose	Member Secretary, Kerala State Disaster Management Authority, Government of Kerala
7.	Ms. Anuradha KC	Additional Secretary, Disaster Management Department, Government of Kerala
8.	Ms. Amrutha K	Hazard Analyst, Kerala State Disaster Management Authority, Government of Kerala
9.	Ms. Shibitha S	Assistant Section Officer, Disaster Management Department, Government of Kerala
10.	Ms. Nimisha Jaiswal	Additional Relief Commissioner, Government of Madhya Pradesh
11.	Mr. Sandeep Dubey	Joint Director (Finance Relief), Government of Madhya Pradesh
12.	Mr. Naveen Kumar	Revenue Officer, Disaster Management Department, Government of Uttarakhand

Annexure 7: References

1. Assam State Disaster Management Authority. (2022). *Assam Flood Memorandum 2022*. Retrieved from https://asdma.assam.gov.in/sites/default/files/swf_utility_folder/departments/asdma_revenue_unecopscloud_com_oid_70/menu/document/assam_flood_memorandum_2022.pdf
2. Assam State Disaster Management Authority. (2025) Minutes of the 52nd Meeting of Assam State Executive Committee. Retrieved from https://asdma.assam.gov.in/sites/default/files/swf_utility_folder/departments/asdma_revenue_unecopscloud_com_oid_70/menu/document/52nd_sec_meeting.pdf.
3. Australian Government Department of Foreign Affairs and Trade. (2025). *Disaster Risk Reduction and Resilience*. Retrieved from [DFAT](#)
4. Census India. (2011). Gujarat. Retrieved from <https://www.censusindia.co.in/States/gujarat..>
5. Census India. (2011). Madhya Pradesh. Retrieved from <https://censusindia.co.in/states/madhya-pradesh>.
6. Census India. (2011). *Assam Population Census 2011: Assam Religion, Literacy, Sex Ratio*. Retrieved from https://www.censusindia.gov.in/2011census/state_profile/assam.html
7. Census India. (2011). *Meghalaya Population Census 2011: Meghalaya Religion, Literacy, Sex Ratio*. Retrieved from [Census India](#)
8. Coalition for Disaster Resilient Infrastructure (CDRI). (2024). *A Compendium of Good Practices on Disaster Resilient Infrastructure (DRI)*. G20 Disaster Risk Reduction Working Group. Retrieved from [CDRI](#)

Coalition for Disaster Resilient Infrastructure and G20 Working Group on Disaster Risk Reduction. (2024). *A Compendium of Good Practices on Disaster Resilient Infrastructure (DRI)*. New Delhi. Retrieved from https://cdri.world/upload/pages/G20_Brazil_Compendium.pdf
9. Collopy, A., Myhre, J., Greenly, J., Fadli, M., Miller, R. K., Mielbrecht, S., & Luft, T. R. K. (2020). *Indonesia National Disaster Preparedness Baseline Assessment*. Pacific Disaster Center. Retrieved from [Pacific Disaster Center](#)
10. Comptroller and Auditor General of India. (2022-23). *Finance Accounts*. Retrieved from <https://cag.gov.in/en/state-accounts-report>
11. Congressional Research Service. (2025). *The Federal Role in Disaster Recovery and Response*. Washington, DC. Retrieved from https://www.congress.gov/crs_external_products/R/PDF/R43537/R43537.5.pdf
12. Department of Disaster Management and Rehabilitation, Government of Uttarakhand. (2013). *Lessons from the 2013 Kedarnath Floods*. Retrieved from [SAARC Disaster Management Centre](#)
13. Directorate of Economics and Statistics, Government of Assam. (n.d.). *State Profile of Assam*. Retrieved from <https://des.assam.gov.in/information-services/state-profile-of-assam>
14. Federal Ministry of the Interior and Community. (2023). *Building Infrastructure Resilience through Sector-Specific Interventions: A Compendium of Good Practices on Disaster Resilient Infrastructure (DRI)*. Berlin. Retrieved

- from https://www.bmi.bund.de/SharedDocs/downloads/EN/publikationen/2023/BMI23017.pdf?__blob=publicationFile&v=1
15. Finance Commission of India. (2005). *Report of the Twelfth Finance Commission (2005-2010)*. Retrieved from <https://fincomindia.nic.in/asset/doc/commission-reports/12th-FC/reports/eng/12fceng.pdf>
 16. Finance Commission of India. (2021). *Report of the Fifteenth Finance Commission (2021-2026)*. Retrieved from <https://fincomindia.nic.in/asset/doc/commission-reports/XVFC-Complete-Report-1.pdf>
 17. Finance Commission, India. (n.d.). XVFC VOL I Main Report. Retrieved from https://fincomindia.nic.in/archive/writereaddata/html_en_files/fincom15/Reports/XVFC%20VOL%20I%20Main%20Report.pdf.
 18. Fiscal Policy Agency, Ministry of Finance, Indonesia. (2018). *Disaster Risk Financing and Insurance in Indonesia*. 16th Senior Finance Officials' Meeting, Madang, Papua New Guinea. Retrieved from [APEC](#)
 19. Forest Survey of India. (2019). *India State of Forest Report 2019 (Vol. II): Meghalaya*. Ministry of Environment, Forest and Climate Change, Government of India. Retrieved from [Forest Survey of India](#)
 20. Global Facility for Disaster Reduction and Recovery (GFDRR). (2012). *FONDEN: Mexico's Natural Disaster Fund – A Review*. Retrieved from [GFDRR](#)
 21. Global Facility for Disaster Reduction and Recovery. (2015). *Philippine Disaster Risk Finance Country Note*. Washington, DC. Retrieved from <https://www.gfdr.org/sites/default/files/publication/Philippine%20-%20Disaster%20Risk%20Finance%20Country%20Note.pdf>
 22. Goswami, A., & Singh, R. (2022, June 2). Walking in the shadow of Madhya Pradesh's devastating floods. *Dialogue Earth*. Retrieved from [Dialogue Earth](#)
 23. Government of Kerala. (Year). *Terms of Reference: 15th Finance Commission*. Retrieved from <https://finance.kerala.gov.in/includeWeb/fileViewer.jsp?dNm=csfc!15!15-TermsOfRef.pdf>
 24. Government of Tamil Nadu. (2023). *Tamil Nadu Disaster Management Plan*. Retrieved from https://ndma.gov.in/sites/default/files/PDF/SDMP/TN_DisasterManagement-Plan.pdf
 25. Gujarat State Disaster Management Authority. (n.d.). Gujarat State Disaster Management Plan: Volume 1. Retrieved from <https://ndma.gov.in/sites/default/files/PDF/SDMP/GUJARAT%20SDMP%202024-25%20VOL%201.pdf>.
 26. Gujarat State Disaster Management Authority. (n.d.). Gujarat State Disaster Management Plan: Volume 2. Retrieved from <http://www.gsdma.org/uploads/Assets/sdmp/finalgsdmpvolume-2final07282023031322898.pdf>
 27. Hofliger Topete, R. (2012). The Mexican Disaster Risk Financing Strategy. *ScienceDirect*. Retrieved from https://www.sciencedirect.com/science/article/pii/S1056819025000028?ref=pdf_download&fr=RR-2&rr=92a1f1596eb059cc
 28. Hofliger, R. (2012). *FONDEN: Mexico's Natural Disaster Fund*. United Nations Framework Convention on Climate Change (UNFCCC). Retrieved from [UNFCCC](#)

29. India Census. (2025). *Uttarakhand Population 2025*. Retrieved from [India Census](#)
30. Jain, S. K., Murty, C. V. R., Arlekar, J. N., Rajendran, C. P., & Rajendran, K. (1999). *Chamoli (Himalaya, India) Earthquake of 29 March 1999*. Earthquake Engineering Research Institute. Retrieved from [NICE](#)
31. Jain, S. K., Singh, R. P., Gupta, V. K., & Nagar, A. (1991). *Garhwal Earthquake of October 20, 1991*. National Information Centre of Earthquake Engineering, IIT Kanpur. Retrieved from [NICEE](#)
32. Kerala State Planning Board. (n.d.). Retrieved from <https://spb.kerala.gov.in/en>.
33. Kerala State Rural Road Development Agency. (2016.). Maintenance Policy. Retrieved from https://pmsgy.nic.in/sites/default/files/KL_Maint_Policy.pdf.
34. Laureano, S. C. (2015). *Disaster Risk Financing and Insurance Strategy of the Philippines*. 13th Senior Finance Officials' Meeting, Bagac, Philippines. Retrieved from https://mddb.apec.org/Documents/2015/FMP/SFOM13/15_sfom13_023.pdf
35. Magotra, R., Shaw, M., Parikh, J., Tyagi, A., & Sharma, Y. (2021). *Disaster Vulnerability Assessment of Shillong, Meghalaya*. Integrated Research & Action for Development (IRADe). Retrieved from [IRADe](#)
36. Manna, G. C., & Institute for Human Development. (2023). *Poverty and Social Monitoring Survey, Analysis of Data and Preparation of report in Uttarakhand*. Directorate of Economics and Statistics, Planning Department, Government of Uttarakhand. Retrieved from [Institute for Human Development](#)
37. Ministry of Home Affairs, Government of India. (2021). *National Disaster Risk Management Fund (NDRMF) and State Disaster Risk Management Fund (SDRMF)*. Retrieved from <https://ndmindia.mha.gov.in/ndmi/viewUploadedDocument?uid=NEW1842>
38. Ministry of Home Affairs, Government of India. (2021). State-wise allocation of State Disaster Response Fund during 2021-2026. Retrieved from <https://ndmindia.mha.gov.in/ndmi/viewUploadedDocument?uid=NEW1851>
39. Ministry of Home Affairs, Government of India. (2022). *Mitigation Funds Guidelines*. Retrieved from <https://ndma.gov.in/sites/default/files/PDF/Reports/Mitigation-Funds-Guidelines-MHA.pdf>
40. Ministry of Home Affairs, Government of India. (2022). *National Disaster Mitigation Fund Guidelines*. Retrieved from <https://ndmindia.mha.gov.in/ndmi/viewUploadedDocument?uid=NEW15>
41. Ministry of Home Affairs, India. (n.d.). Report Volume-I: Disaster Score Card for States and Union Territories of India. Retrieved from <https://ndmindia.mha.gov.in/ndmi/viewUploadedDocument?uid=I103>.
42. Ministry of Home Affairs. (2022). *Guidelines on Constitution and Administration of the National Disaster Mitigation Fund (NDMF)*. Retrieved from <https://ndmindia.mha.gov.in/ndmi/responsefund>
43. Ministry of Home Affairs. (2025). *Allocation and Release of Funds from SDRF and NDRF during 2024-2025*. Retrieved from <https://ndmindia.mha.gov.in/ndmi/viewUploadedDocument?uid=NEW2483>
44. Ministry of Home Affairs. (2025). *Allocation and Release of Funds from SDRF and NDRF during 2024-2025*. Retrieved from <https://ndmindia.mha.gov.in/ndmi/viewUploadedDocument?uid=NEW2484>
45. National Disaster Management Authority (NDMA). (2021). *Detailed Report: Uttarakhand Disaster*. Retrieved from [NDMA](#)

46. NITI Aayog, & United Nations Development Programme (UNDP) India. (2024). *Multidimensional Poverty in India since 2005-06*. Retrieved from NITI Aayog (https://www.niti.gov.in/sites/default/files/2024-01/MPI-22_NITI-Aayog20254.pdf)
47. NITI Aayog. (2023). *Meghalaya's Progress In Reducing Multidimensional Poverty As Per NITI Aayog's Index*. Retrieved from [Northeast Today](#)
48. Prajapati, S. (2020, December 2). Madhya Pradesh's recurring droughts: Measuring, responding and reducing the vulnerabilities. *India Water Portal*. Retrieved from [India Water Portal](#)
49. Prakash, M. (2024, August 5). *Uttarakhand forest fires devastate nearly all districts*. Mongabay-India. Retrieved from [Mongabay-India](#)
50. Press Information Bureau. (2020, January 23). *Subhash Chandra Bose Aapda Prabandhan Puraskar 2020 announced*. Ministry of Home Affairs, Government of India. Retrieved from <https://www.pib.gov.in/Pressreleaseshare.aspx?PRID=1600326>
51. Press Information Bureau. (2021, July 28). *Loss of Life and Property due to Cyclone Yaas*. Ministry of Home Affairs, Government of India. Retrieved from [PIB](#)
52. Press Information Bureau. (2023, July 24). State-wise data on per capita income. Retrieved from <https://pib.gov.in/PressReleaselframePage.aspx?PRID=1942055>.
53. Press Information Bureau. (2024). *National Disaster Risk Management Fund and State Disaster Risk Management Fund*. Retrieved from <https://www.pib.gov.in/PressReleaseDetailm.aspx?PRID=1983474>
54. Press Information Bureau. (2025, January 29). *Meghalaya secures funds for lightning and forest fire mitigation*. Ministry of Home Affairs, Government of India. Retrieved from [PIB](#)
55. Press Information Bureau. (2025, March 11). Overall Credit Disbursement to Priority Sectors Jumps 85% from ₹23 Lakh crores in 2019 to ₹42.7 Lakh crores in 2024. Retrieved from <https://pib.gov.in/PressReleaseDetailm.aspx?PRID=2115092®=3&lang=1>.
56. Sati, V. P., & Gahalaut, V. K. (2023). *Environmental and economic impact of cloudburst-triggered debris flows and flash floods in Uttarakhand Himalaya: A case study*. *Geoenvironmental Disasters*. Retrieved from [Geoenvironmental Disasters](#)
57. Sethi, B. P. (2022). *Disaster Management in Odisha*. Chemical & Industrial Disaster Management (CIDM). Retrieved from [CIDM.pdf](#)
58. United Nations Development Programme. (2018). Post-Disaster Needs Assessment - Kerala. Retrieved from <https://www.undp.org/publications/post-disaster-needs-assessment-kerala#:~:text=The%20Post-Disaster%20Needs%20Assessment%20for%20Kerala%2C%20India%20uses.and%20to%20recommen%20the%20recovery%20needs%20and%20strategies>.
59. United Nations Development Programme. (n.d.). Towards a Disaster Resilient Community in Gujarat. Retrieved from https://www.undp.org/sites/g/files/zskgke326/files/migration/in/towards_a_disaster_resilient_community_in_gujrat.pdf
60. United Nations Office for Disaster Risk Reduction. (2025). Global Assessment Report on Disaster Risk Reduction 2025. Geneva. Retrieved from <https://www.undrr.org/media/48550/download?startDownload=20250327>
61. World Bank. (2011). *Turkey Catastrophe Insurance Pool (TCIP): Pooling Risk to Protect Homeowners*. Washington, DC. Retrieved

from <https://documents1.worldbank.org/curated/en/853431468188946296/pdf/97450-BRI-Box391476B-PUBLIC-poolstuddy-DFI-TCIP-Jan11.pdf>

62. World Bank. (2021). *Disaster Risk Management in South Asia: A Regional Overview*. Retrieved from [World Bank Open Knowledge Repository](#)
63. World Bank. (2022, August 11). *Supporting Morocco's Journey to Disaster and Climate Resilience*. Retrieved from [World Bank](#)
64. World Bank. (2023). *Document Title*. Retrieved from <https://documents1.worldbank.org/curated/en/099307303292335604/pdf/IDU0a9a7774208020b3fa0eb1485d1fe25.pdf>
65. XV Finance Commission (2020) Finance Commission in COVID Times Report for 2021-26 Volume II: 'Annex 8.3: Methodology for Determination of State Level Allocations of Disaster Management' pages 310-

