



# Cost–Benefit Analysis of Insurance Mechanisms– The Experience of Nagaland

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# Background

## Nagaland: High exposure to climate-induced risks

- Frequent:
  - Extreme rainfall
  - Floods
  - Landslides
- Increasing **economic and social losses**

## The Core Challenge

- Disaster losses are:
  - Unpredictable
  - Increasing in frequency
- Traditional systems:
  - Reactive
  - Slow
  - Financially inefficient

*“Risk is increasing faster than preparedness — and that gap must be closed.”*



# Strategic Shift

## Insurance as a Policy Tool

- Insurance = **risk transfer mechanism**
- Converts:
  - Uncertain losses → predictable costs
- Enables:
  - Fiscal stability
  - Faster recovery

*“Disaster management is no longer an event—it is a system.”*



# Insurance Mechanisms Considered

## Types of Insurances

- Traditional indemnity insurance
- Social protection schemes
- Microinsurance
- **Parametric insurance (selected for disaster risk)**

## Why Parametric Insurance

- Quick payouts
- Transparent triggers
- No need for damage verification
- Suitable for **weather-based disasters**

*From compensation delays → automatic protection.*



# DRTPS

## The Nagaland Initiative

- Disaster Risk Transfer Parametric Solution (DRTPS).
- Product Solution Designed & Conceptualized by NSDMA, **with Technical and Financial support from ISF & Frankfurt School of Finance & Management**
- **MHA-DM/ NDMA/ other partners such as SBI General Insurance and Munich- Re.**
- Covers state-level disaster risk.

## How DRTPS Works

1. Predefined rainfall thresholds.
2. Data from weather stations.
3. Trigger → automatic payout.



# STRATEGIES

Disaster

Risk

Transfer

Parametric

Insurance

Solution (DRTPS)

2024-2027

1

- **Premium VS Sum Insured**
  - (4.20 crore VS 50.00 crores annually, 150 crores for three years)

2

- **Threshold and Trigger**

3

- **Grid precision and Realtime Data Source**  
(based on AWS & IMD Grid data)



# PRODUCT STRUCTURE



## Product Structure for High Flood Risk Tehsils-

### Monsoon Period: 1<sup>st</sup> June to 31<sup>st</sup> October 2024

<b>Excess Seasonal Rainfall</b> <i>Aggregate Rainfall over Monsoon Period above or equal to Trigger Point</i>		Strike Point	Payout
	Payout Trigger Level	1500 mm	10% of Tehsil sum insured
	Incremental Payout per additional 80 mm		10% of Tehsil sum insured
	Payout Exit Level	2220 mm	100% of Tehsil sum insured

### Non-Monsoon Period: 1<sup>st</sup> November to 31<sup>st</sup> May

<b>Excess Unseasonal Rainfall</b> <i>Cumulative Rainfall over 7 Consecutive Days within Phase Period above or equal to trigger point - Single Payout</i>		Strike Point	Payout
	Payout Trigger Level	120 mm	3% of Tehsil sum insured
	Incremental Payout per additional 9 mm		3% of Tehsil sum insured
	Payout Exit Level	200 mm	30% of Tehsil sum insured



# DRTPS

## Financial Structure

- Annual premium (predictable)
- Coverage (significantly higher than premium)
- Risk pooling across the state

## Cost Components (Nagaland Context)

- Premium cost
- Weather infrastructure
- Data systems
- Minimal administrative cost



# DRTPS

## Benefit Components

- **Direct:**
- Immediate payouts
- No delay in relief
- **Indirect:**
- Reduced economic losses
- Faster recovery
- Governance efficiency

## Cost–Benefit Perspective

- **Without Insurance:**
- High loss burden
- Delayed recovery
- Fiscal stress
- **With DRTPS:**
- Predictable cost
- Immediate liquidity
- Reduced losses

# DRTPS

## Benefit–Cost Ratio Concept

- $BCR = \frac{\text{Total Benefits}}{\text{Total Costs}}$
- $BCR > 1 \rightarrow$  viable
- Nagaland experience indicates **strong positive returns**

## Observed Benefits (Nagaland)

- Faster payout cycles
- Reduced administrative delays
- Improved targeting of support



# DRTPS

## Why DRTPS Matters

- First-of-its-kind **state-scale model in India**
- Demonstrates **practical viability of parametric insurance**
- Provides **replicable framework**

## Policy Insight

- Insurance is not expenditure
- It is **risk investment for resilience**



# DRTPS

## Replicability

- Scalable to:
  - Other states
  - Or regional scale consortium of States.
- Integratable with:
  - Climate risk frameworks

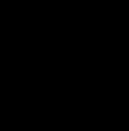
## Closing Statement

- **“Nagaland’s experience shows that effective disaster management begins not after the disaster—but with how risk is financially prepared in advance.”**



We are building an **integrated, technology-driven and future-ready disaster resilience ecosystem for Nagaland**

where systems, science, finance, infrastructure, and governance converge.



*Thank You*

**NSDMA**