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: 1st June to 31st October 2024			
Excess Seasonal Rainfall *Aggregate Rainfall over Monsoon Period above or equal to Trigger Point*		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: 1st November to 31st May			
Excess Unseasonal Rainfall *Cumulative Rainfall over 7 Consecutive Days within Phase Period above or equal to trigger point - Single Payout*		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	Cost Components (Nagaland Context)
• **Annual premium (predictable)** • **Coverage (significantly higher than premium)** • **Risk pooling across the state**	• 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

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

DRTPS

Benefit–Cost Ratio Concept

- $BCR = \frac{\text{Total Benefits}}{\text{Total Costs}}$
- BCR > 1 → 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.