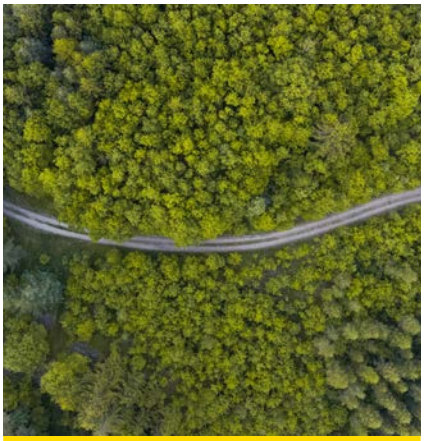
Liberty Mutual REINSURANCE



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Your preferred partner

- Leading underwriting experts with extensive market knowledge.
- Innovative and tailored solutions to meet your needs.
- Strong financial security through Lloyd's (S&P A+) and Liberty Mutual Group (S&P A) papers.

Parametric Wind Damage Forestry Insurance

1. Context and Problem Statement:

High-impact windstorms (including hurricanes, cyclones, derechos, and severe convective storms) are increasingly damaging forests across the globe. Windthrow (trees uprooted or broken by wind) leads to:

- Direct timber losses
- Significant increases in fire risk due to downed fuel
- Infrastructure threats, like roads or powerlines being blocked
- Increased pest outbreaks (bark beetles in storm-damaged wood, for example)

Traditional indemnity insurance is not always adapted to the needs of the asset owners:

- Complex and slow claims adjustment process that require in-person inspections
- Catastrophic windthrow losses can be hard to model for some territories and rarely take into account the underlying assets (like age or type of trees that have different wind resistance levels)
- In some areas, wind damage is simply excluded from the insurance policies

Why Now

- Climate change is increasing windstorm frequency and severity.
- The forest economy, carbon markets, and bioeconomy all depend on better risk transfer and rapid recovery solutions.
- Forestry owners, managers, timberland investors, utilities, and public agencies need more scalable, objective, and rapid financial protection and risk insights.

2. Solution Overview: A Parametric Index for Wind Damage in Forestry

Key Idea

Build a transparent, objective parametric insurance product for forest windthrow (and related storm loss) using a blend of:

- **SAR (Synthetic Aperture Radar) satellite data:** Detects and quantifies storm-related changes in forest canopy, even through clouds and darkness.
- **Optical imagery:** Supplements SAR to help classify storm-impacted areas and refine damage mapping.
- **Ground-based and modeled wind data:** Confirms that damaging wind speeds occurred in the area and correlates event intensity with observed loss.
- **AI and advanced analytics:** Integrate multi-source data for robust, automated damage detection and loss index calculation.

Parametric Index Structure

Unlike traditional indemnity insurance, which requires detailed loss assessments and can lead to lengthy claims processes, parametric insurance offers a streamlined, data-driven approach. This alternative solution enables faster, more

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Liberty Mutual REINSURANCE

The Feeling's Mutual

Proof in numbers

'A' Standard & Poor's rating (strong)

$50.2bn U.S. annual consolidated revenue

27 countries and economies

9th largest property & casualty insurer globally

$43.8bn total capital

objective, and transparent financial protection for policyholders by using remotely sensed technologies without the need of on the ground assessment.

- **Trigger**: Payout is activated when:
  1. Wind speed exceeds a defined threshold at/near the insured forest (modeled or station data), and
  2. SAR/optical change detection confirms a minimum area of forest loss/damage within a defined window
- **Payout**: Scaled according to:
  - Area or percentage of forest impacted (as mapped by SAR/AI)
  - Severity class (e.g., crown loss, trunk breakage, total uproot)
  - Optional integration of timber value, carbon value, or business interruption

Why This Approach Is Transformative

- **Speed**: Detects and quantifies wind damage in near real-time—days after the storm, not weeks/months after field assessment.
- **Objectivity**: Uses independently validated, third-party data to trigger payouts—removing subjectivity/disputes.
- **Scalability**: Suitable for any forested area, from large timber plantations to municipal/utility woodlands.
- **Basis risk reduction**: Combines physical event trigger with observable forest change, reducing mismatch between payout and real loss.

3. Markets, Commercial Plan

European-Led Launch with Global Forest Sector Ambition

The initial rollout targets collaborative development and validation with leading European forestry stakeholders, leveraging advanced SAR, optical, and meteorological technologies from project partners in accordance with ESA priorities. Following successful pilot deployments, the solution is designed for rapid scaling to global commercial forestry markets, where climate-driven windstorm risk and the demand for innovative resilience tools are rising.

With the global forestry market value estimated to more than US$200 billion in import and export (Statista 2025, Forestry Worldwide) and strong annual growth expected across the sector, this solution directly addresses unmet insurance needs for forest owners, timber investors, utility companies, and governments worldwide. The same approach can be extended to other wind-exposed natural capital assets such as parks, plantations, and ecosystem restoration areas.

Commercialization

- B2B partnerships with insurers, reinsurers, forest management companies, utility operators, and timberland investors
- Integration options: Offered via API for insurance partners or as a turnkey service through a dedicated digital portal (with visualization and risk dashboards)
- Localization and compliance: Tailored to diverse regulatory and market environments, informed by pilot feedback and regional forestry standards
- Scalable global model: Designed for both mature insurance markets and underserved forest economies, enabling affordable, data-driven wind risk solutions at any scale

This strategy supports sustainable development in the forestry sector and strengthens climate resilience globally—catalyzing commercial adoption beyond Europe, in North America, South America, Asia-Pacific, and Africa.