

Proposed Research Topic

A systematic review of the effectiveness of insurance mechanisms in mitigating financial losses from climate-related catastrophes

PART 1

Objectives

1. To systematically evaluate the effectiveness of insurance mechanisms in reducing, transferring, or managing financial losses associated with climate-related catastrophes.
2. To examine the effectiveness of parametric and index-based insurance in providing rapid financial relief following climate-induced extreme events.
3. To evaluate the role of insurance in reducing economic vulnerability and recovery time after climate-related catastrophes.

Three Approaches

1. **Narrative Review** - A narrative review allows broad exploration without strict methodology.

How it fits:

- a) can discuss the evolution of climate-risk insurance, global trends, and theoretical frameworks.
- b) can compare how different countries use insurance to manage climate catastrophes.
- c) can explore policy debates, challenges (e.g., affordability, moral hazard), and future directions.
- d) No strict inclusion criteria or quality appraisal required.
- e) SPIDER model will be applied.

Useful for: Building a conceptual understanding of how insurance interacts with climate-change risk.

2. **Systematic Review** - A systematic review requires structured, replicable methods.

How it fits:

- a) There is abundant empirical research on catastrophe insurance performance, payouts, resilience outcomes, and economic impacts.
- b) can define clear inclusion criteria (e.g., studies measuring financial loss reduction, recovery speed, or resilience outcomes).
- c) Outcomes are quantifiable: insured vs. uninsured losses, payout speed, recovery metrics, cost-benefit ratios.
- d) PRISMA guidelines can be applied easily.

Useful for: Answering a focused question about the effectiveness of insurance in mitigating climate-related losses.

3. **Scoping Review** - A scoping review maps the breadth of existing research.

How it fits:

- a) Climate-risk insurance is diverse: catastrophe bonds, micro-insurance, parametric insurance, sovereign risk pools, public–private partnerships.
- b) A scoping review can explore types of insurance, regions, hazards, policy frameworks, and research gaps.
- c) Ideal if want to understand how the field is structured rather than test effectiveness.
- d) No need for strict quality appraisal.

Useful for: Identifying what research exists, where gaps are, and how future studies should be designed.

Review Type	Purpose	How This Topic Fits
Narrative Review	Broad overview	Explores theories, trends, and policy debates in climate-risk insurance
Systematic Review	Evaluate effectiveness	Ideal due to measurable outcomes and abundant empirical studies
Scoping Review	Map the field	Captures diversity of insurance models, hazards, regions, and gaps

PART 2

SLR Recording Table

Index	Authors	Years	Title of the Article	Journal	Context / Country	Resaerch Aim	Sample Size / Data	Key Findings	Theoritical Lens	Relevance to the Resaerch Topic	Strengths	Limits	Keywords
001	Giuzio et al.	2026	Climate change, catastrophes, insurance and the macroeconomy	European Economic Review	cross-country analysis	several thousand disaster events higher insurance coverage significantly reduces macroeconomic losses from climate-related catastrophes.	47 developed countries (1996 -2019)	less severe economic downturns long-term GDP impact climate insurance protection gap.	neoclassical Ramsey–Solow growth models	effectiveness of insurance mechanisms in mitigating financial losses	provides large-scale empirical evidence	Study is in line with General Insurance concepts	Insurance protection gap Reinsurance Natural catastrophes Economic growth Climate change lobar warming
002	Barry et al.	2023	Environment Systems & Decisions – Insurance + Disaster Risk Management Integration	Environment Systems and Decisions	EU citizens and businesses	paper presents a conceptual framework for cross-sectoral collaboration between the insurance and DRM communities towards open, transparent and optimised disaster risk management for all EU citizens and businesses	DRM communities (Disaster Risk Management)	significantly improves financial resilience post-disaster recovery costs how insurance effectiveness increases when paired with early-warning systems and risk-reduction measures.	Insurance catastrophe models	how and why insurance mechanisms work	insurers could take a more active role across the temporal plane of a natural disaster	Geography is limited to EU countries and the reality of the other regions could be varied	Disaster resilience Insurance Disaster risk financing Public–private partnerships Natural catastrophe DRM

Theoritical Background

1. Risk Transfer Theory (Insurance Economics Theory)

Core idea: Risk Transfer Theory explains how individuals, firms, and governments shift financial risk to insurers to reduce the economic impact of uncertain catastrophic events.

Why it fits your topic: Climate-related catastrophes create high-severity, low-frequency losses. Insurance is fundamentally a risk-transfer mechanism, allowing households, businesses, and states to transfer climate-related financial risk to insurers or reinsurers.

How it aligns with the research: Shows why insurance reduces financial losses, Explains how risk pooling and diversification work, Supports analysis of catastrophe insurance, reinsurance, parametric insurance, sovereign risk pools, Helps evaluate the effectiveness of insurance mechanisms, Connects directly to financial resilience and recovery

Key concepts used: Risk pooling | Risk diversification | Moral hazard | Adverse selection | Catastrophe modelling | Premium pricing | Reinsurance and retrocession

Why it is perfect: It is the primary theoretical lens used in almost all climate-insurance studies and will anchor the SLR in established insurance economics.

2. Climate Risk & Resilience Theory (Climate Adaptation Theory)

Core idea: Climate Risk & Resilience Theory explains how societies prepare for, absorb, recover from, and adapt to climate-related shocks. Insurance is considered a financial resilience tool within this theory.

Why it fits your topic: The research examines whether insurance mechanisms mitigate financial losses from climate catastrophes and this is exactly what resilience theory evaluates.

How it aligns with the research: Frames insurance as part of climate adaptation strategies ,Helps assess whether insurance improves post-disaster recovery, Connects insurance to resilience indicators (speed of recovery, reduced vulnerability, financial stability), Supports evaluation of protection gaps and coverage gaps, Links insurance to long-term climate adaptation

Key concepts used: Climate vulnerability | Adaptive capacity | Resilience building | Disaster risk reduction (DRR) | Loss and damage | Protection gap | Financial resilience

Why it is perfect: It positions insurance not just as a financial tool but as a climate adaptation mechanism, which strengthens the conceptual depth of the SLR.

Theory	What it explains	Why it matters for your SLR
Risk Transfer Theory	How insurance reduces financial losses	Directly addresses “effectiveness of insurance mechanisms”
Climate Risk & Resilience Theory	How insurance supports climate adaptation and recovery	Addresses “mitigating financial losses from climate catastrophes”