

Just in Time

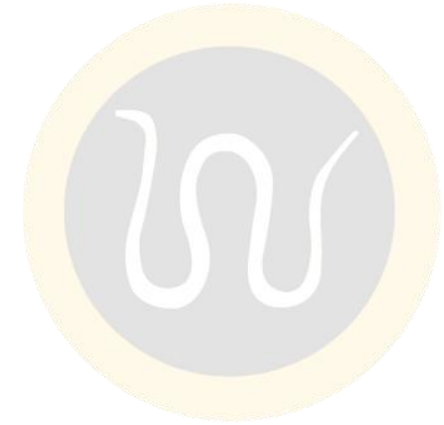
EIOPA Seeks Input on Adaptation Measures in NatCat Insurance under Solvency II

April 2026



Executive Summary

- EIOPA's paper evaluates whether adaptation measures should receive a dedicated prudential treatment within the Natural Catastrophe (NatCat) standard formula beyond regular parameter recalibration, while maintaining proportionality between risk sensitivity and complexity.
- Climate change is increasing the frequency and severity of natural catastrophes, contributing to a growing insurance protection gap in the EU. EIOPA highlights that adaptation measures are essential to limit future losses and preserve the availability and affordability of NatCat insurance.
- While previous analysis shows that adaptation may reduce non-life premium risk, such effects are already indirectly captured in historical data, whereas the NatCat module relies mainly on sums insured and does not automatically reflect adaptation measures.
- The paper also underlines the insurance sector's role in supporting resilience by incentivising adaptation measures and contributing to broader risk reduction efforts.



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Keywords: NatCat, Solvency II, Climate Change



01

Introduction



Introduction 1/2

The [EIOPA's paper](#) aims to assess whether a **dedicated prudential treatment** of adaptation measures in the **Natural Catastrophe** (NatCat) standard formula (SF) is justified beyond the regular recalibration of parameters. The analysis is guided by proportionality, seeking a balance between risk sensitivity and complexity.

Climate change is increasing the frequency and severity of natural catastrophes, while insurance coverage remains partial, resulting in a substantial and growing **insurance protection gap**.

Between 1981 and 2023, natural catastrophes caused approximately €900 billion in direct economic losses in the EU, with a disproportionate share occurring in recent years. Only a fraction of these losses was insured.

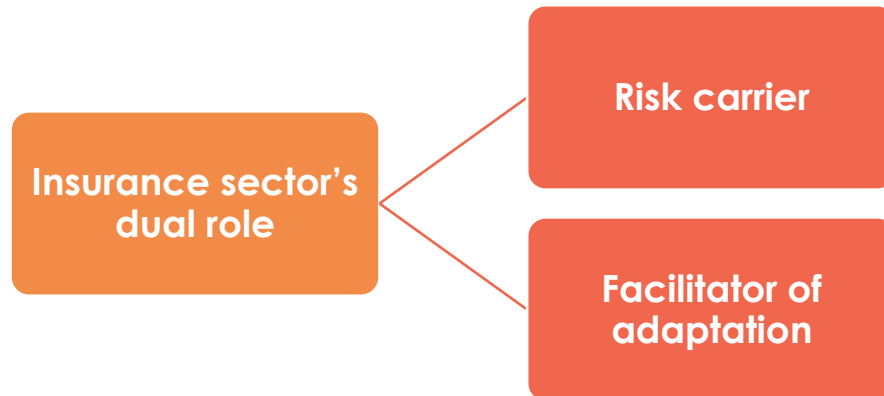
EIOPA stresses that **risk reduction through adaptation measures**, alongside mitigation of greenhouse gas emissions, is essential to limit future losses and ensure the long-term **availability and affordability of NatCat insurance**. Without sufficient adaptation, risk-based premiums are expected to rise, potentially rendering insurance unaffordable or unavailable in high-risk areas.

The paper builds on EIOPA's earlier work on the prudential treatment of sustainability risks.

Prior analysis of non-life premium risk showed moderate evidence that adaptation measures can reduce risk.

However, premium risk inputs already reflect such measures indirectly through historical data, whereas the **NatCat catastrophe module** relies primarily on **sum insured data**, which does not automatically capture adaptation effects

This gap motivates the present assessment



Through underwriting practices, data analytics, and advisory services, insurers can incentivise **micro-level adaptation measures** (e.g. flood barriers, reinforced windows). EIOPA frames this role under the concept of “**impact underwriting**”, whereby insurers contribute to societal resilience while remaining consistent with actuarial principles. At the same time, EIOPA recognises the importance of **macro-level adaptation measures**, such as flood defences or land-use planning, typically implemented by public authorities. Effective resilience requires coordination across micro, meso, and macro levels to avoid maladaptation and systemic risk accumulation.

02

Scope



Scope

The analysis focuses on the **NatCat catastrophe module** of the Solvency II standard formula.

While premium and reserve risk may already capture adaptation effects through observed claims and premiums, the NatCat module assesses extreme events using exposure-based inputs.

Adaptation measures are not automatically reflected

EIOPA notes a potential **perverse incentive**: certain adaptation measures may increase the replacement value of assets (and thus sums insured), leading to higher capital charges unless risk parameters adequately reflect reduced vulnerability.

Geographic Scope

- The scope covers exposures in the **European Economic Area (EEA), the United Kingdom, and Switzerland**. Non-EEA exposures are considered immaterial for the purposes of this assessment, as they represent a small share of NatCat SCR calculated using the standard formula.

Perils Considered

- The NatCat standard formula covers earthquake, flood, windstorm, hail, and subsidence. Given their relative contribution to SCR, the paper later focuses primarily on **windstorm, earthquake, and flood**, while hail and subsidence are treated as less material.

Parameters in Scope

- The assessment considers country factors, zonal relativities, aggregation matrices, and country correlations. These parameters determine the capital charge and are calibrated using catastrophe models.

03

How the Prudential Framework Currently Reflects the Impact of Adaptation Measures



How the Prudential Framework Currently Reflects the Impact of Adaptation Measures 1/2

Calibration of Standard Formula Parameters

- EIOPA explains the multi-step calibration process for NatCat parameters. Country factors are derived from **200-year return period losses** relative to total insured value, using outputs from commercial catastrophe models. Industry Exposure Databases (IEDs), maintained by model vendors, provide standardised representations of insured assets, including location, construction type, occupancy, and policy conditions.
- The calibration relies on expert judgement through a structured “mini-Delphi” process to converge on final parameter values. This approach inherently averages across portfolios and regions.

Structure of Catastrophe Models

Catastrophe models consist of four core components:

1. **Hazard module**, simulating event frequency and intensity.
2. **Exposure module**, describing assets at risk.
3. **Vulnerability module**, translating hazard intensity into damage using vulnerability or fragility curves.
4. **Financial module**, applying insurance terms to generate insured losses.

These models are probabilistic and incorporate uncertainty around event occurrence and damage outcomes.

How the Prudential Framework Currently Reflects the Impact of Adaptation Measures 2/2

Reflection of Adaptation Measures in Models

Adaptation measures can be reflected at different stages:

- **Hazard modification**, mainly relevant for flood and wildfire through macro measures (e.g. flood defences).
- **Exposure description**, where asset characteristics reflect adaptation investments.
- **Vulnerability functions**, which adjust damage expectations for adapted assets.

The degree of reflection varies by peril and depends on data availability.

Peril-Specific Discussion

- **Windstorm**: Hazard modification is generally not feasible. Adaptation is reflected through building characteristics and vulnerability curves.
- **Earthquake**: Macro hazard modification is limited. Micro measures, such as seismic retrofitting, reduce vulnerability.
- **Flood**: Both micro and macro measures can be reflected. Macro defences influence hazard severity, while micro measures (dry and wet flood-proofing) reduce vulnerability.
- **Hail and Subsidence**: Adaptation primarily affects vulnerability through construction choices and maintenance practices.

Limitations and Challenges

- Limited data on property-level adaptation measures.
- Use of averaged exposure assumptions in standard formula calibration.
- Difficulty in distinguishing between adaptation effects already embedded in historical data and those not yet reflected.

While catastrophe models can capture adaptation measures in principle, **practical constraints limit their systematic reflection** in the current standard formula.

04

Discussion of Materiality of Different Peril/Region in the Standard Formula



Discussion of Materiality of Different Peril/Region in the Standard Formula

Given the diversity of perils and regions, the paper assesses whether adaptation measures warrant differentiated treatment within the standard formula. Materiality is evaluated based on exposure, contribution to SCR, and relevance of adaptation for specific perils.

Focus on Major Perils

Windstorm, earthquake and flood account for the **majority of NatCat SCR**.
Hail and subsidence are excluded from detailed analysis due to their **lower impact**.

Windstorm

Macro adaptation measures are generally not applicable. Micro measures related to building standards and construction quality may significantly influence losses. The paper presents country-level analyses of exposure and SCR, identifying jurisdictions where windstorm risk is most material and where enhanced reflection of micro adaptation could be relevant.

Earthquake

Similar to windstorm, macro hazard modification is limited. Micro measures, particularly building codes and retrofitting, are highly relevant. The analysis highlights countries with significant seismic exposure and older building stock, where adaptation measures could materially reduce risk.

Flood

Flood risk allows for both macro and micro adaptation. The materiality analysis considers the presence of flood defences, national schemes, and exposure concentrations. Flood emerges as a key candidate for improved reflection of adaptation measures due to the diversity and effectiveness of available interventions.

05

Discussion on a Dedicated Treatment of Adaptation Measures



Discussion on a Dedicated Treatment of Adaptation Measures

EIOPA examines whether the existing framework sufficiently captures adaptation effects or whether specific adjustments are warranted. The analysis considers risk sensitivity, proportionality, and the avoidance of undue complexity.

Potential Options

Each option is assessed against criteria such as data availability, consistency, and the risk of double counting macro measures already embedded in country factors.

- 1** **Status quo**, relying on periodic recalibration of parameters.
- 2** **Adjustments to exposure or vulnerability assumptions** within the standard formula.
- 3** **Explicit recognition of adaptation measures**, subject to evidence and supervisory approval.

Supervisory Considerations

Any dedicated treatment would require robust documentation, verifiability of adaptation measures, and safeguards against arbitrage. EIOPA emphasises that undertakings would need to demonstrate the effectiveness and permanence of measures to justify capital relief.

06

Assessment of Further Development of Adaptation Measures



Assessment of Further Development of Adaptation Measures

Windstorm

- The paper reviews the evolution of building codes and construction practices, noting gradual improvements in resilience. However, the pace of change is uneven across countries, and legacy building stock remains a source of vulnerability.

Earthquake

- Seismic adaptation is characterised by long time horizons. Retrofitting is costly and slow, but building codes for new construction significantly reduce vulnerability. The impact on portfolio-level risk emerges gradually.

Flood

- Flood adaptation shows the most dynamic development, with increasing investment in both structural defences and property-level measures. The paper presents quantitative illustrations of damage reduction and benefit-cost ratios, highlighting the potential for significant loss mitigation.

Overall Discussion

EIOPA concludes that adaptation measures are expected to increase over time, but their impact on NatCat risk will materialise progressively. Prudential frameworks need to remain flexible to accommodate this evolution without overstating short-term effects.

07

Conclusions & Take-aways



Conclusions & Take-aways



Adaptation measures are essential to limit future NatCat losses and support the long-term insurability of climate-related risks.



The **current Solvency II standard formula can reflect adaptation measures in principle**, primarily through catastrophe model calibration, but **practical limitations remain**.



Flood risk offers the greatest scope for improved reflection of adaptation measures due to the effectiveness of both micro and macro interventions.



Windstorm and earthquake risks are mainly influenced by micro-level measures linked to building standards and construction quality.



A **dedicated prudential treatment** of adaptation measures may be conceptually justified but raises challenges related to data, verification, proportionality, and consistency.



Any future adjustments should **avoid perverse incentives**, prevent double counting, and maintain the balance between risk sensitivity and simplicity.



Regular recalibration of standard formula parameters, informed by evolving adaptation practices, remains a key tool for reflecting long-term risk reduction.

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