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Labeling Resilience

Why catastrophe bonds belong in the labeled-bond market, and how the green bond accountability chain could make them a model for measurable, proactive impact

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Executive Summary

Catastrophe bonds already fund recovery from climate disasters, yet they sit almost entirely outside a labeled-bond market that has seen more than $7.5 trillion of cumulative issuance. A credible label could bring new institutional capital to a natural-catastrophe protection gap of roughly $424 billion.

Key points

- **Call them resilience bonds**. "Catastrophe bond" names the disaster, not what the capital does, and can sound like a bet against the climate when investors are in fact the ones who absorb the loss. The name should be earned through a credible framework, not simply adopted.
- **Labels still matter, if they can be verified**. Cumulative labeled-bond issuance has passed $7.5 trillion. Investors are favoring labels backed by clear use of proceeds and robust reporting over looser, KPI-style labels.
- **The accountability chain already exists**. Framework, second-party opinion, annual reporting and assurance can be borrowed directly from the green bond market. Generali has shown it fits a cat bond, and the Climate Bonds Resilience Taxonomy sets out the principles for judging resilience claims.
- **Measure prevention, not just payouts**. Most cat bonds are not impact investments today. A tiered framework that tests added capacity, protection-gap reduction and proactive risk reduction, reported annually, can separate the ones that are and push insurers to reduce risk before disasters, not just pay after them.
- **A credible label broadens the investor base**. It gives pensions, endowments, foundations, insurers and sustainable fixed income managers a category for these bonds, consistent with GIIN impact criteria and the direction of SFDR and EU insurance policy, and supports deeper order books, more issuance and possibly better pricing.
- **Next step: start with a pilot**. Sponsors and brokers issue a labeled tranche alongside a regular renewal, impact investors and asset owners signal demand for labeled supply, and standard setters develop sector criteria from the first deals.

Two markets that should be working together

The labeled-bond market is large and, despite the political backlash against ESG, durable. Cumulative labeled sustainable bond issuance passed $7.5 trillion by mid-2026, and the Climate Bonds Initiative counts about $5.4 trillion of aligned green, social and sustainability debt still outstanding, with roughly half a trillion dollars issued in the first half of 2026 alone.[1,2] At the same time, the catastrophe bond market keeps setting records, with issuance in the first half of 2026 breaking previous highs, yet it is still funded largely by specialist ILS investors.[3] These two markets have almost nothing to do with each other, and both are poorer for it.

Our argument has three parts. Sustainable and impact investors still care about labels, and about the credibility infrastructure behind them. Labeling frameworks create real benefits, and one major insurer has shown the architecture works for catastrophe bonds. And cat bonds could become a meaningful labeled deal stream: the baseline instrument already clears much of the bar, and with modestly better disclosure it could set a higher standard than much of what is labeled today. Done well, a label could bring pensions, endowments, foundations, insurers and sustainable fixed-income managers into a market still dominated by ILS specialists.

To be clear from the start: most cat bonds today are not impact investments, and we will not argue otherwise. That is why the market needs a label that can tell the difference. Catastrophe bonds already provide resilience. The work ahead is measuring it well enough to earn the label.

A better name: resilience bonds

The name itself is part of the problem. "Catastrophe bond" describes the event investors are paid to bear, not the function the capital performs. To many trustees and boards it even suggests a wager on disaster, as though someone profits when the climate gets worse. The reality is the reverse: investors absorb the loss when a covered event occurs, and that capital funds recovery. We propose "resilience bond" as a broad category name for risk-transfer securities that meet a credible resilience framework. The Climate Bonds Initiative makes a similar choice, preferring "resilience" over "adaptation" because non-specialists understand it more readily.[4]

The term has history. In 2015, re:focus partners, working with Goldman Sachs, RMS and Swiss Re with Rockefeller Foundation support, launched RE.bound, a cat bond structure that rebates part of the premium when a city invests in risk-reducing infrastructure.[5] In 2019, EBRD issued a $700 million Climate Resilience Bond aligned with the Climate Bonds Initiative's Climate Resilience Principles.[6] These are different instruments built on one idea: capital organized around the ability to withstand and recover from climate shocks. That idea is broad enough to serve as a category, with labeled cat bonds as one part of it.

The name has to be earned. A renamed product without the framework, review, reporting and assurance described in this paper would invite the very greenwashing criticism the label is meant to prevent. Bonds that clear the minimum bar set out below could carry the resilience name; everything else remains a catastrophe bond.

1. Sustainable and impact investors still care about labels

Labeled-bond demand has outlasted the ESG backlash. RBC Capital Markets' 2025 survey of more than 50 institutional investors managing about $22.1 trillion found continued, significant appetite for green, social and sustainability bonds, with green bonds seen as the most value-additive. What investors asked for is telling: clearly defined use of proceeds, evidence that money was allocated as promised, and robust post-issuance reporting.[7]

Market composition reinforces the point. Green bonds made up 69% of labeled issuance in the second quarter of 2026, a record quarter for the label. Sustainability-linked bonds, which tie coupons to looser entity-level KPIs, have declined for several consecutive years, with issuance down about two-thirds year over year in that same quarter.[8,9] The message from investors is consistent: they still want labels, provided they can verify what sits behind them.

A credible cat bond label should therefore be built on transparent, verified reporting rather than looser KPIs. That is where cat bonds have an unusual advantage.

2. Frameworks create value, and the accountability chain is the real product

The green bond market's most important invention is the accountability chain that stands behind each label. Under ICMA guidance, each link has a defined role:

Step	Green bond practice	What investors get
1. Framework	Eligible categories, project selection, management of proceeds, reporting commitments	What should happen
2. Second-party opinion	Independent review of the framework's alignment with ICMA and its expected impact	Confidence before capital is committed
3. Annual issuer reporting	Allocation and impact reporting, often per $1M invested, using the Harmonised Framework for Impact Reporting	What did happen
4. Assurance / verification	Third-party verification of allocation and reported results	Confidence that reported results hold up

ICMA's June 2026 External Review Guidelines recommend independent review both before and after issuance, and the EU Green Bond Standard has now written external review into regulation.[10] The Harmonised Framework for Impact Reporting, developed by the multilateral development banks, gives investors comparable indicators of what each dollar accomplished.[11] This chain is what turns a sustainability claim into something an investment committee can underwrite, a consultant can map to a mandate, and an allocator can report to its own stakeholders.

Generali has already proven the chain fits a cat bond
Generali first published a Green ILS Framework in 2020 and sponsored Lion III Re in 2021, a €200 million catastrophe bond widely described as the first green cat bond.[12,13] In 2024 it expanded the program into a Green, Social and Sustainability ILS Framework aligned with the four ICMA core components and ICMA's external review recommendations.[14] Sustainalytics issued a second-party opinion on that framework in May 2024, and Generali returned to the market in 2025 under the updated framework.[15,16]

Generali allocates an amount equal to the risk capital released by each transaction to eligible green and social projects, invests the collateral in framework-consistent instruments, and reports on allocation.[17] It also states that one purpose of the framework is to diversify its investor base toward sustainable investors: the investor-base argument, in a sponsor's own words.[18]

The limitation is also instructive. Most of Generali's measured impact sits next to the risk transfer, in released capital and green collateral, rather than coming from the risk transfer itself. The second-party opinion notes that Generali has limited control over the collateral notes and relies on the original issuers' reporting for their impact.[19] Generali proved a cat bond can carry a label. The next step is a label that measures the resilience the bond itself delivers.

3. Cat bonds as a labeled deal stream

The baseline already clears much of the bar
Consider an ordinary natural-catastrophe bond. A sponsor defines a catastrophe risk by peril and geography. That risk is modeled in exceptional detail. Investors provide fully collateralized capacity that supplements or competes with traditional reinsurance. If the defined event occurs, investor capital absorbs the loss. The result is more capital available to absorb catastrophic risk and fund recovery.

The need is large, as Section 5 shows, and it is largest in emerging economies. Climate adaptation is a recognized objective under ICMA's Green Bond Principles, and ICMA's guidance on green enabling activities accepts activities that are not green in themselves but are necessary to deliver green outcomes, if the benefit is clear, measurable and attributable.[20, 21]

There are early signs of demand. Several recent offering documents we reviewed, including Citrus Re, Four Lakes Re, Sabine Re and Kilimanjaro Re, make sponsor ESG questionnaires available on request while disclaiming them as unvalidated.[22] The sample is illustrative, not representative, but it suggests sustainability information is being shared informally, without the accountability chain that would make it decision-useful.

One caveat matters. A conventional cat bond does not fit the classic use-of-proceeds mechanics, because its collateral exists to pay losses, not to build projects. The claim is that cat bonds clear much of the substantive bar, not that they already satisfy ICMA as written. The more durable answer is a framework designed for what risk capital enables, not just what proceeds finance. The most practical route is sponsor-level frameworks reviewed against ICMA's principles now, as Generali has done, with a sector standard developed through ICMA or the Climate Bonds Initiative once a handful of deals establish common practice.

From baseline to measured impact

Not every cat bond deserves a label. A tiered framework lets investors separate risk transfer that genuinely advances resilience from catastrophe exposure that merely involves the climate:

Tier	Question the framework asks
1. Risk transfer	Does the bond transfer measurable natural-catastrophe risk?
2. Financial resilience	Does it strengthen claims-paying and risk-bearing capacity?
3. Capacity additionality	Does it add net capacity rather than simply replace existing reinsurance?
4. Protection gap	Does that capacity enable more underlying insurance coverage in exposed areas?
5. Risk reduction	Is the sponsor actively reducing the physical risk it insures?
6. Affordability	Does the transaction contribute to more stable or lower cost of protection?
7. Recovery	Can the sponsor show faster, broader financial recovery after events?

Tiers 1 and 2 describe most baseline cat bonds. Tiers 3 through 7 are where additional disclosure tells investors how much impact is actually occurring. The distinction between Tiers 3 and 4 is especially important. A $500 million bond that replaces $500 million of existing reinsurance diversifies risk but may not close the protection gap at all. A bond that allows an insurer to keep writing, or expand, coverage in a capacity-constrained market may close it meaningfully. Protection-gap additionality should be the north-star metric.

A minimum bar for the label. To be eligible, a bond should meet Tiers 1 and 2 and demonstrate at least one of Tiers 3 through 5. Frameworks should also set exclusions, for example underlying exposures concentrated in fossil-fuel extraction or new development in designated high-hazard zones. Clear thresholds give second-party opinion providers something to test and give impact investors a reason to trust the label.

Addressing the moral-hazard objection

The strongest critique from impact investors is that cheaper catastrophe protection can encourage more building in harm's way. That risk is real, and it is why a resilience label should not reward capacity alone. Tier 5 is the safeguard: a labeled bond should reward capacity that comes paired with measurable risk reduction, not capacity that simply underwrites more exposure. Handled this way, the moral-hazard objection becomes an argument for the framework rather than against it.

4. From reactive to proactive

The obvious impact of a cat bond happens after a catastrophe. The larger opportunity is before it. Insurers that transfer catastrophe risk have every economic reason to reduce the underlying risk, and the catastrophe model behind each deal tells them where, for which peril, and by how much. A credible framework should ask what the sponsor does with that information beyond pricing. The full impact chain runs in three stages:

- **Prevent**: premium credits for fortified roofs, wind and flood mitigation, wildfire defensible space; inspection and mitigation programs; risk communication to policyholders; support for resilient rebuilding.
- **Protect**: added and diversified capacity, stability through hard markets, continued willingness to write in exposed regions, and potentially a lower marginal cost of protection.
- **Recover**: claims-paying capacity, preserved insurer capital and faster financial recovery for households, businesses and communities.

Generali's released-capital mechanism suggests a practical bridge. A next-generation framework could direct part of the capital released by the transaction to mitigation programs in the same geographies and perils the bond covers, so that the impact is traceable to the deal itself. Sponsors could also report mitigation adoption and the resulting change in modeled loss each year.

The incentive problem is real

Where insurance compensation is tied to premiums written, it can reward writing more exposure rather than reducing it. Annual reporting helps here in a structural way. Payouts appear only after a catastrophe, but mitigation adoption and modeled-loss reduction can move every year, so recurring reporting naturally gives the proactive side visibility. If labeled demand improves a sponsor's cost of capital or access to capacity, risk reduction becomes a measurable source of shareholder value, and that gives management a reason to measure and reward it.

What a report could look like

An illustrative, hypothetical annual Resilience Impact Statement for a $500 million U.S. hurricane bond:

Metric	Illustrative disclosure
Peril and region	Named-storm wind; specified Gulf and Southeast coastal counties
Protection per $1M	Insured value protected and number of policies supported per $1M of principal
Capacity additionality	Share of the limit that is net new versus replacing existing reinsurance (may be disclosed as a range)
Protection gap	Estimated share of the regional insured-versus-economic gap addressed
Prevention	Share of covered policies with mitigation credits; number of mitigation inspections; resilience spending
Risk reduction	Year-over-year change in modeled average annual loss attributable to verified mitigation
Recovery (if triggered)	Principal released, claims supported, and time from event to payment
Assurance	Modeling firm or audit-firm verification of exposure and mitigation data

Most of these figures already exist in the catastrophe model, the sponsor's policy data or the offering documents. The added work is mainly organizing and verifying them.

5. Where a label would matter most

The need is not in doubt. Swiss Re puts the global natural-catastrophe protection gap at roughly $424 billion, and in many emerging economies 80–90% of catastrophe losses go uninsured.[23, 24] Developed markets are not immune. In the EU, only about a quarter of climate-related catastrophe losses are insured, and in some countries less than 5%.[25] In the U.S., a Federal Reserve survey found that 84% of disaster-affected small firms reported interruption or lost sales, yet fewer than one-third were insured for it, and rising homeowners' premiums, now about 14% of the typical mortgage payment, have been linked to higher mortgage delinquency.[26,27] Uninsured losses do not disappear. They fall on households, businesses, lenders and public budgets.

Jamaica shows what additionality looks like. When Hurricane Melissa struck in October 2025, its World Bank parametric cat bond paid out the full $150 million, helping the government move quickly from relief to reconstruction.[28,29] Its May 2026 renewal was upsized from a $150 million target to $200 million, a sign of real investor demand for well-structured resilience cover.[30,31]

Sovereign, development-bank and parametric covers for municipalities, utilities and small businesses are the natural first candidates for a resilience label. The capacity is often new, payouts arrive quickly, and the people protected would otherwise have little or no cover.

6. The resilience accountability chain

Applied to cat bonds, the four-step chain would look like this:

Step	Resilience bond version
Framework	Eligible perils and regions; exclusions for harmful underlying exposures; additionality tests; prevention commitments tied to covered geographies and perils
Second-party opinion	Independent view on additionality, protection-gap targeting and the credibility of prevention commitments
Annual reporting	Protection per $1M; people and assets covered; share of regional protection gap addressed; mitigation adoption; change in modeled loss; post-event payout speed and recovery data
Assurance	Verification of exposure data, mitigation statistics and modeled-loss changes by an audit firm or independent modeler

Here cat bonds hold a structural advantage. A green bond financing a building must estimate its future environmental benefit. A catastrophe bond quantifies at issuance the geography, peril, probability and severity of the risk its capital supports. A Florida wind bond, for example, arrives with a named set of counties, a named peril and a modeled loss. Catastrophe models have real limits, particularly as climate conditions shift, but few instruments start with a richer measurement foundation.

7. Where this fits: CBI, GIIN impact and SFDR

Labeled-bond standard setters, impact investors, sustainable fund managers and EU-regulated products each use a different yardstick. A resilience bond framework only works if it maps cleanly onto all of them.

The Climate Bonds Resilience Taxonomy

The Climate Bonds Initiative has done much of the conceptual work. Its Resilience Taxonomy, first released in 2024 and supported by an updated methodology in 2026, defines what counts as a credible resilience investment, and interim criteria now allow certification against it under the Climate Bonds Standard.32 The motivation is the same gap this paper addresses: CBI research found that only 19% of labeled green bonds had any resilience-related use of proceeds.[33] Several features of the taxonomy line up closely with the framework proposed here:[34]

- **Insurance is already in scope**. The taxonomy includes insurance as a subsector and lists the provision or expansion of weather-related insurance schemes as a resilience investment. Its screen for that activity excludes insurance of fossil-fuel extraction, storage, transport or manufacture, which is the same exclusion proposed for the resilience bond minimum bar.
- **Enabling investments**. The taxonomy separates investments that make an asset resilient from "enabling" investments that strengthen the resilience of other activities, and asks enabling investments to quantify their contribution beyond the investment itself, for example the number of additional people with access. That is protection-gap additionality in different words.
- **Measurable, attributable contribution**. A substantial contribution must be a discernible reduction in vulnerability or exposure, assessed ex ante, attributable to the investment and defined at the output level. Catastrophe models, exposure data and a Resilience Impact Statement are well suited to that test.
- **Maladaptation**. Investments must not unintentionally increase vulnerability or exposure, including through repeated financing of the same activity in one place. That is the moral-hazard concern behind Tier 5.

The fit is not complete. The taxonomy is built mainly for ring-fenced use-of-proceeds financing and does not yet address entity-level resilience, and a conventional cat bond fits neither neatly. Its sector criteria are still being validated by technical working groups. That is an opening rather than an obstacle: the principles needed to assess risk transfer exist in a recognized standard, and the Climate Bonds Initiative is a natural home for the sector criteria described earlier.

The GIIN core characteristics

The Global Impact Investing Network defines impact investments as those made with the intention to generate positive, measurable social or environmental impact alongside a financial return, and sets out four core characteristics.[35] The framework proposed here lines up with each:

GIIN characteristic	How a resilience bond framework addresses it
Intentionality	The sponsor states a resilience objective for defined perils and regions, with prevention commitments, in a published framework
Evidence and impact data in design	Catastrophe models, exposure data and protection-gap estimates exist at issuance; Tiers 3–4 test additionality
Managing impact performance	Annual Resilience Impact Statement, prevention KPIs and independent assurance create a feedback loop
Contributing to industry growth	A shared template and common metrics, compatible with IRIS+-style indicators, let evidence build across deals

Two limits remain. GIIN intentionality refers to the investor's motive, and many ILS buyers seek an uncorrelated return rather than a resilience mission. And additionality is strongest at issuance; secondary purchases change who holds the risk without adding capacity. A label addresses the issuer side. Impact investors cover their side by buying in primary deals and setting resilience objectives for their allocations, which together moves a labeled resilience bond into credible impact territory.

SFDR and the EU direction of travel

Under today's SFDR, most cat bond funds are classified as Article 8, and the few Article 9 designations are self-assessed.[36] In our view, outside allocators have little means to test those claims. The EU Taxonomy already recognizes catastrophe protection as a contribution to climate adaptation, but security-level evidence of what each bond delivers is rarely available.[37]

That gap matters more under the proposed revision. The Commission's November 2025 proposal, on which the Council agreed its position in June 2026, would replace Articles 8 and 9 with Sustainable, Transition and ESG Basics categories.[38,39] The first two would require at least 70% of a product's investments to meet a clear, measurable objective, and products outside the categories would face strict limits on sustainability claims in names and marketing.[40] Application is not expected before about 2028, but managers will need holding-level evidence, and a resilience bond with a framework, second-party opinion and annual reporting provides exactly that.[41]

Policy is moving toward prevention

On October 27, 2026, the European Commission presented an EU Framework for Climate Resilience, proposed a Climate Resilience Law and set out plans for a Climate Insurance Alliance of insurers, reinsurers, intermediaries, investors, risk modelers, regulators and public authorities. The Alliance is tasked with increasing insurance uptake, incentivizing risk prevention and ensuring sufficient capacity, with first proposals due by the end of 2027. The Commission also estimates that adaptation investment can return more than ten times its cost through avoided losses.[42]

Those three goals, uptake, prevention and capacity, match the prevent, protect and recover structure of this paper closely. Resilience bonds with prevention KPIs are a ready-made capital-markets tool for the Alliance to consider, and the participants it names are the same parties needed to build the first deals.

8. What it means for each party to the deal

A label only works if the people who build the bonds see value in it:

- **Impact investors and asset owners**: verified outcomes per dollar, covering prevention and recovery, in an allocation they can report to boards and beneficiaries.
- **Sponsors and cedants**: demand beyond ILS specialists and credit for mitigation many run today. Sensitive data such as reinsurance pricing can be reported in ranges or certified privately.
- **Brokers, modelers and assurance providers**: a differentiated product, wider distribution, and a reusable template that extends work done at issuance.

The economic case

Green bond advocates increasingly frame labels as protecting returns, not just the planet.[43] Cat bonds make that case more directly than almost any labeled instrument:

- **A broader institutional investor base**. For many institutions, an unlabeled, often unrated catastrophe bond is hard to fit within investment guidelines, and their sustainable mandates have no category to place it in. A credible label gives consultants and investment committees a way to map cat bonds to existing sustainable fixed-income and impact allocations, opening the door to pensions, endowments, foundations, insurers' general accounts and wealth platforms. A label addresses classification; a credit rating addresses eligibility. Together they open the institutional door. Demand is already visible: CalPERS, the largest U.S. public pension, grew its cat bond and ILS investments by about 70% in the first half of 2026, to nearly $2.5 billion, and Fermat has launched U.S.-domiciled cat bond funds for large allocators that cannot access the asset class offshore.[44,45] Federal Reserve research tied the green bond pricing advantage to oversubscription and index inclusion, and Jamaica's one-third upsizing shows what a deeper book can do.[46]
- **A commitment device**. BIS research found green bond issuers cut emissions by more than 10% in the four years after issuance.[47] A resilience label could do the same for mitigation programs.
- **Protecting returns, literally**. In an indemnity cat bond, prevention that lowers modeled loss in the covered portfolio lowers the chance investors lose principal. For parametric and industry-index triggers the link is indirect, but proactive impact is still aligned with investor interests, not opposed to them.
- **Possible pricing benefit**. Greenium evidence is mixed: it has narrowed since 2022, and for some corporate issuers it has reversed.[48,49] Research on sovereign issuers finds it is larger for those more exposed to climate risk.[50] A broader investor base comes first; better pricing is a possible result, not a promise.

A practical path to the first deals

None of this requires new regulation or a new market. A sponsor, working with its broker and modeling firm, could take five steps:

- **Adopt a framework**. Build on ICMA principles and Generali's precedent, adding the resilience tiers, minimum bar and exclusions above.
- **Obtain a second-party opinion**. Get an independent review of additionality, protection-gap targeting and prevention commitments.
- **Pilot a labeled tranche**. Issue it alongside a regular renewal so the label can be tested without changing the core risk transfer.
- **Publish the first annual Resilience Impact Statement**. Use data that sits in the model, policy records and offering documents.
- **Add assurance and scale**. Have the modeler or an audit firm verify results, then reuse the template across later deals and sponsors.

Brokers are well placed to lead, and impact investors and asset owners can speed things up by telling brokers and sponsors directly that they want labeled supply.

Conclusion

The labeled-bond market is moving in a direction that favors cat bonds: away from loose labels and toward verified reporting. Generali has shown that a catastrophe bond can carry a label, receive a second-party opinion and report annually. Cat bonds produce unusually precise risk data at issuance, and standard setters and regulators, from the Climate Bonds Initiative to SFDR and the new EU Climate Insurance Alliance, are asking for exactly this kind of measurable, prevention-oriented evidence.

What remains is to connect those pieces: a framework built for what risk capital enables, independent review, annual reporting on both proactive and reactive outcomes, and assurance. Bonds that meet that standard deserve a name that describes what they do. Resilience bonds would bring a broader base of institutional investors and new capacity to a market that needs both. They could also give sustainable finance something it has struggled to produce: a clear, verified account of what each dollar actually protects.

> *The greatest sustainability potential of catastrophe bonds lies in what additional risk-bearing capacity, measured and verified, allows insurers to do before a catastrophe ever occurs.*

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