CLIMATE RISKS: INSURANCE & REINSURANCE

30° Convegno RIB-Assigeco
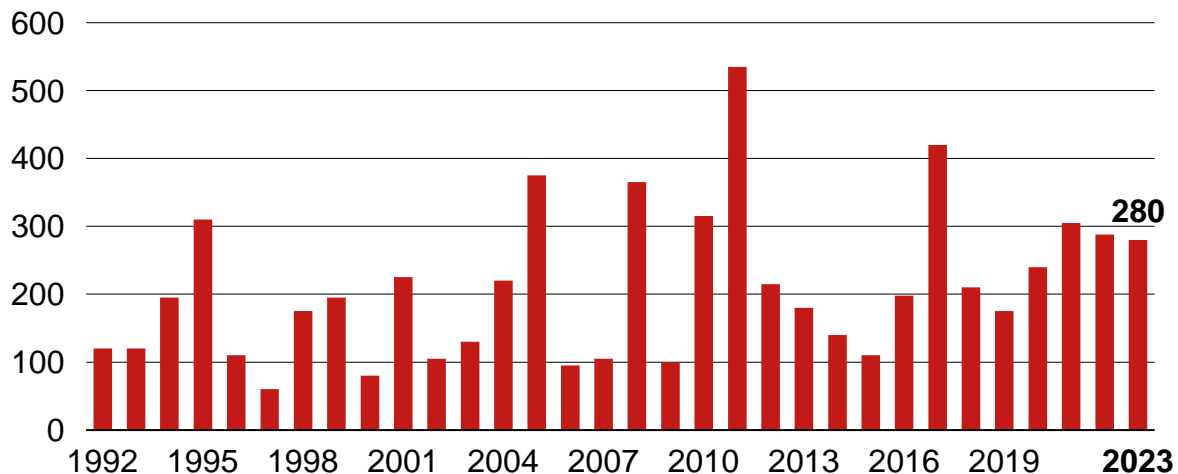Cap Ferrat 17th - 18th October 2024

Franco Urlini
Group Chief P&C and Reinsurance Officer
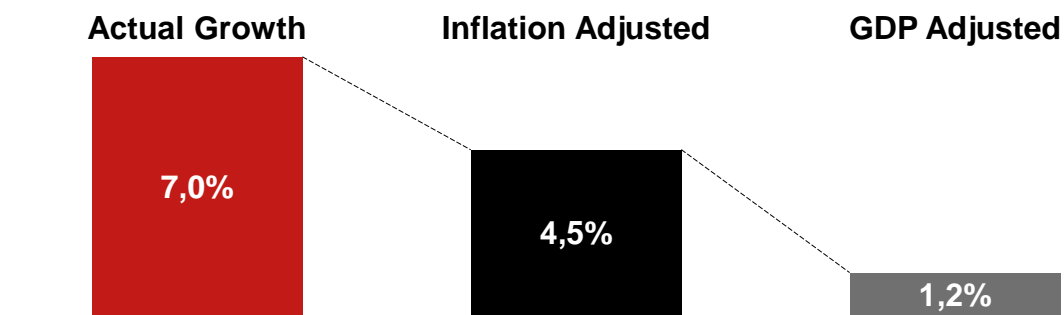Generali

GENERALI

NATURAL CATASTROPHES CAUSED SIGNIFICANT ECONOMIC LOSSES OVER THE PAST DECADES WITH A GROWING TREND IN THE LAST 5 YEARS

Global Nat-Cat Economic Losses 1992-2023 | $Bln; 2023 prices

280

Average Annual Growth Rate of Economic Losses 1992-2022

Actual Growth — 7,0%
Inflation Adjusted — 4,5%
GDP Adjusted — 1,2%

NATURAL CATASTROPHES

Nat-Cat events refer to large-scale disasters or calamities that result from natural phenomena, such as hurricanes, earthquakes, floods, tornados, wildfires, tsunamis, and volcanic eruptions. These events cause significant damage to properties, infrastructures and ecosystems, as well as loss of life and displacement of populations

ECONOMIC LOSSES

Nat-Cat direct economic losses are exacerbated by exposures concentration resulting from economic development, urbanization and rising population, often in regions susceptible to natural hazards like coastal regions, hinterland of large cities

HISTORICAL TRENDS

Continuous growth of economic losses in actual, inflated and GDP-adjusted terms. The **annual growth rate between 1992 and 2022** is respectively around 7,0%, 4,5% and 1,2% on a **10-year moving average basis.**
Therefore, **climate change currently accounts for approximately 1% of the annual increase in losses**, with exposure growth and inflation being the main contributors. **In 2023 economic losses amount to 280 $Bln**, 55 $bln above the 10-year average

Source: Swiss Re. Sigma 01/2024. Natural Catastrophes in 2023: gearing up for today's and tomorrow's weather risks
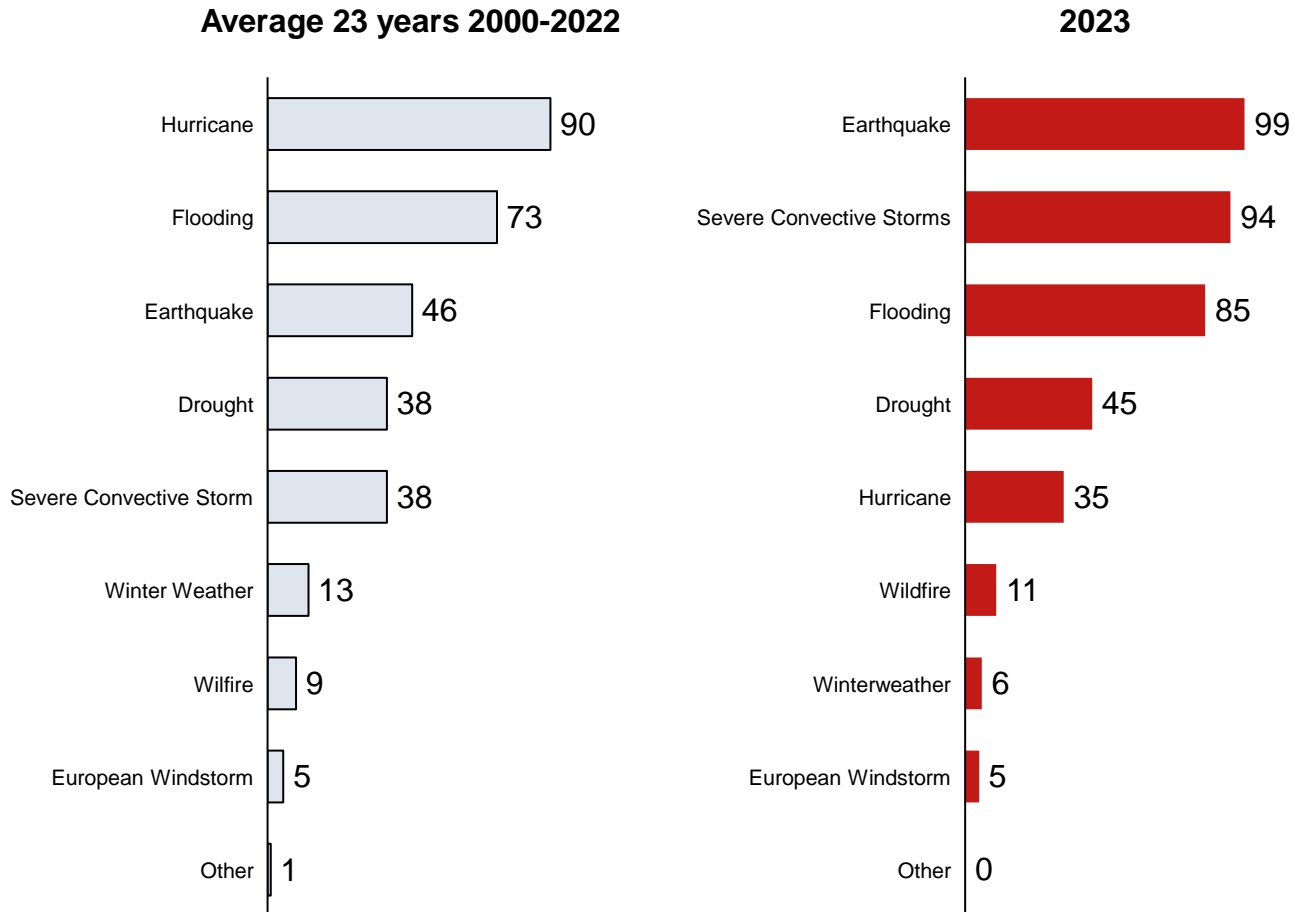Economic Losses: financial losses directly attributable to a major event including business interruption. Economic losses are estimated and should be seen only as an indication of the general order of magnitude
Adjustment for inflation: US consumer price index to give current (2023) values

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HURRICANES AND FLOODINGS WERE THE MAIN DRIVERS OF NAT-CAT; EARTHQUAKES AND SEVERE CONVECTIVE STORMS ON THE RISE

Global Nat-Cat Economic Losses by Peril | $Bln; 2023 prices

Average 23 years 2000-2022

Peril	Value
Hurricane	90
Flooding	73
Earthquake	46
Drought	38
Severe Convective Storm	38
Winter Weather	13
Wilfire	9
European Windstorm	5
Other	1

2023

Peril	Value
Earthquake	99
Severe Convective Storms	94
Flooding	85
Drought	45
Hurricane	35
Wildfire	11
Winterweather	6
European Windstorm	5
Other	0

- Over the past 23 years **hurricanes and floodings were the main drivers of Nat-Cat economic losses** amounting, in average, respectively to 90 $Bln and 73 $Bln

- Costliest peril varies year on year, e.g.:
  - **In 2022, with more than $100+ billion of economic losses, hurricane was by far the costliest natural peril** of the year, with vast majority of losses resulting from Hurricane Ian
  - **In 2023,** driven by the costly sequence in Turkey and Syria**, earthquake is the costliest peril of the year, followed by severe convective storms**

Source: Aon Catastrophe Insight (2024)

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NATURAL CATASTROPHES PRIMARY AND SECONDARY PERILS
TWO CATEGORIES OF CLIMATE RISKS

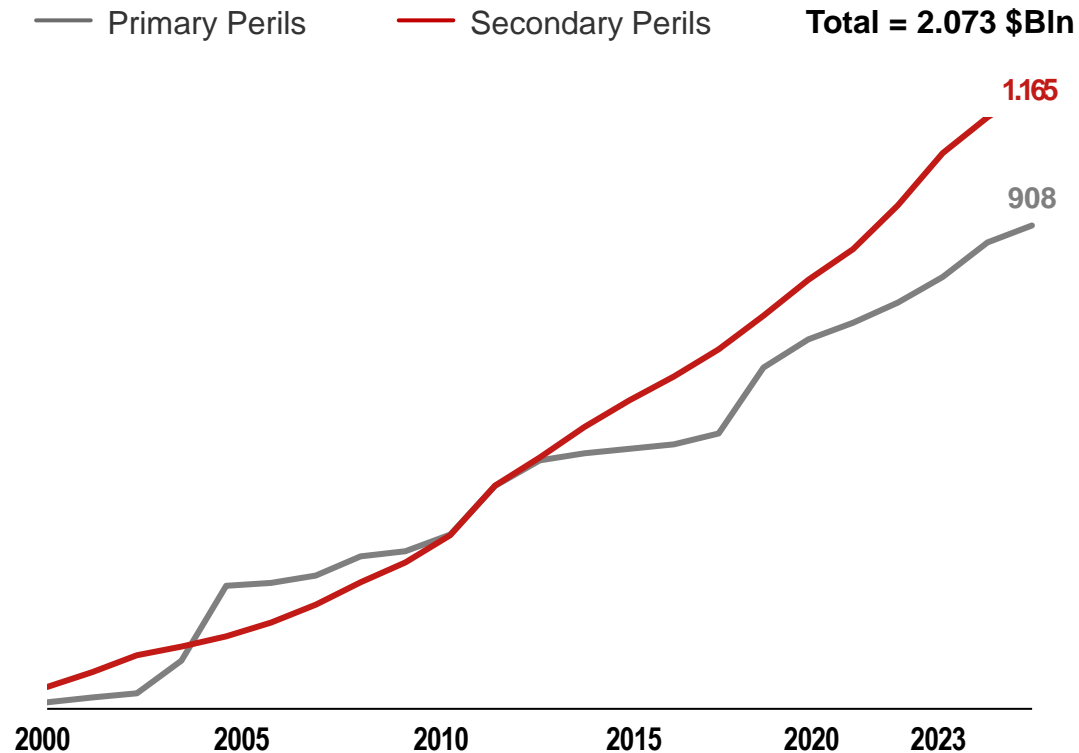|	PRIMARY PERILS	SECONDARY PERILS
EXAMPLES	Hurricane, Earthquakes (not climate-related), Winter storms, Riverine floodings	Severe convective storms (SCS), Flash floods, Droughts, Wildfires, Landslides, Freeze
IMPACT ON INSURANCE	Low frequency, but high loss potential	Relatively frequent, often low-to-medium sized losses
MODELLING CAPABILITIES	More robust modelling	Weak/no modelling

- **Nat-Cat in the insurance industry have been traditionally categorized into primary and secondary perils**, posing a clear distinction between relatively rare and large loss potential catastrophe events (hurricanes and earthquakes) and more frequent and generally less severe natural events (such as hails, floods or bush fires).

- **Primary Perils** are so-called "peak" perils that generated high loss potential for the insurance industry. These perils are **well monitored, with well-established catastrophe models**

- **Secondary Perils** can be classified into two further categories:

  - **Independent Secondary Perils** that are typically characterized as catastrophic and severe weather perils that are not considered "peak".

  - **Secondary effects of Primary Perils**, such as storm surges, hurricane inducing inland floodings, tsunamis and fires following an earthquake.

These events **have historically been treated with a less rigorous approach** are **not captured well in the catastrophe modelling**

Additional impacts associated with these events include contingent business interruption, demand surge, and supply chain disruptions, all of them can **increase loss costs for policyholders and insurers**

Source: Swiss RE Institute, AM Best data and research

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INCREASED IMPACT FROM EXTREME WEATHER EVENTS MAINLY DRIVEN BY SECONDARY PERILS

Global Nat-Cat Cumulative Insured Losses | $Bln

— Primary Perils   — Secondary Perils   **Total = 2.073 $Bln**

1.165

908

2000   2005   2010   2015   2020   2023
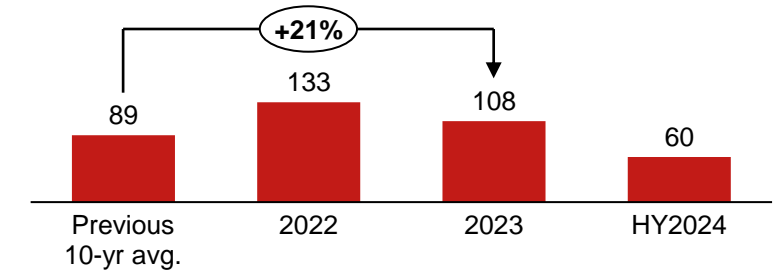
- Based on recent observations, especially **the growth in frequency/severity of secondary perils** (e.g.; heatwaves, droughts, wildfires, extreme precipitation and storms) **is accelerating and these perils have become** the main driver of the rising in Insured Losses

- As a matter of fact, while catastrophes stemming from primary perils resulted in the largest individual event losses, **since the start of the century insured losses caused by secondary perils were cumulatively higher at 1.165 $Bln (vs. 908 $Bln for primary perils), driven mainly by the increase in SCS**

Source: Aon Catastrophe Insight (2024)

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NAT-CAT INSURED LOSSES CONSTANTLY GROWING SINCE 1994 WITH A STRONG ACCELERATION IN 2017-2022

Nat-Cat Insured Losses 1994-2023 | $Bln

Hurricanes Katrina, Rita, Wilma

Japan & NZ Earthquakes Thai Flood

Hurricanes Harvey, Irma, Maria

Hurricane Ian

USD billion

- Earthquakes
- Weather-related losses
- Exponential trend
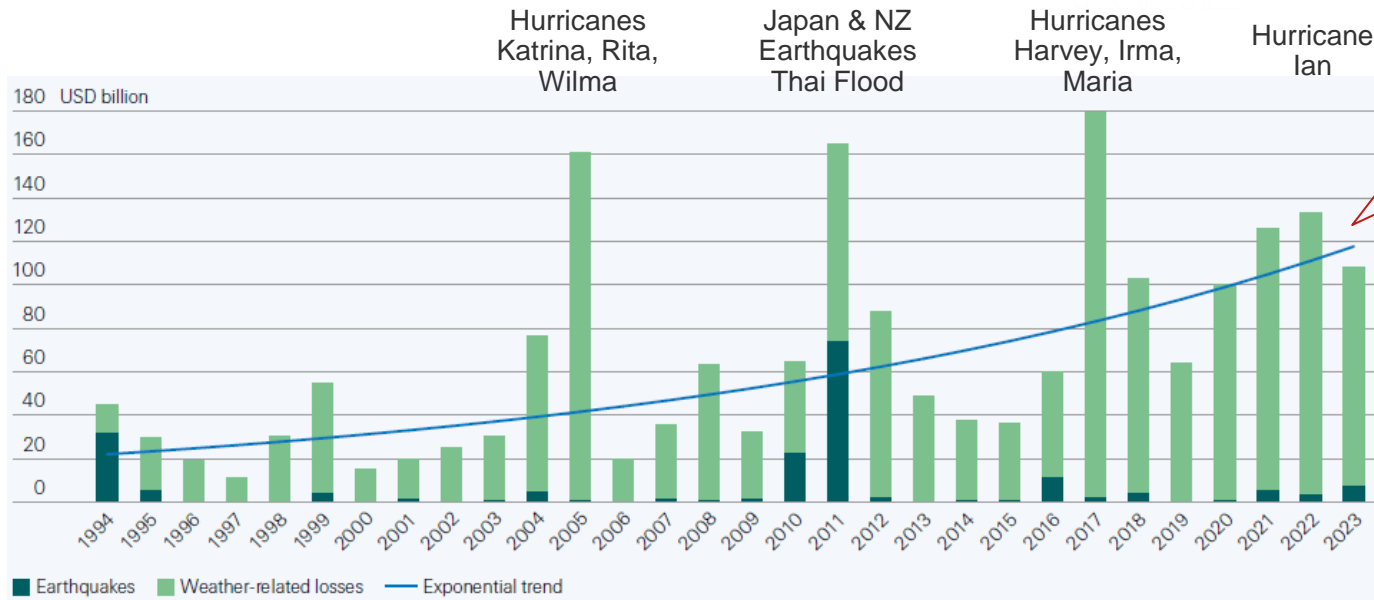
Nat-Cat Insured Losses FY23 and HY24 | $Bln

+21%

Previous 10-yr avg.	2022	2023	HY2024
89	133	108	60

Top 5 Nat-Cat Insured Losses in 2023 | $Bln

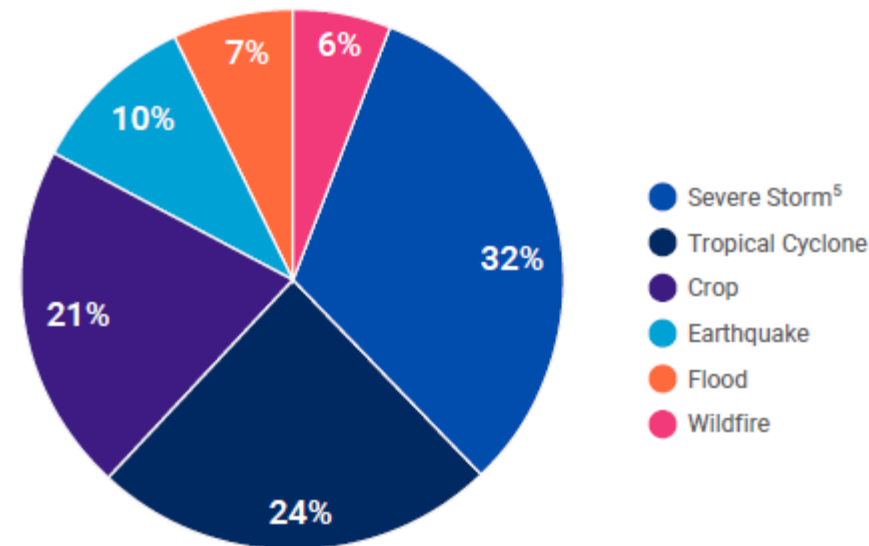| Date	Event	Location	Economic Losses	Insured Losses
01/01-12/31	US Drought	United States	14.0	6.5
02/06-02/20	Turkey & Syria EQs	Turkey - Syria	92.4	5.7
07/21-07/26	SCS	Europe	7.0+	5.2
03/01-03/03	SCS	United States	6.2	5.0
03/31-04/01	SCS	United States	5.5	4.4

- Insured losses from natural catastrophes have grown by 8% on an average annual basis since 1994, although a substantial increase in activity occurred in 2017 – 2022, when three of the top 5 most expensive years were recorded

- **Insured losses from natural catastrophe events in 2022 were 133 $Bln** - driven mostly by extreme weather events - well above the previous 5-year and 10-year averages

- **2023** was the **fourth consecutive year** with losses topping **100 $Bln, driven more by frequency than severity and well above the 10-year average**

- The largest loss of the year can be attributed to the seasonal drought in the United States, with total crop insurance payouts above 6,5 $Bln. The earthquake sequence in Turkey and Syria came second, but vast majority of the large events were concentrated in North America

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MODELLED AVERAGE ANNUAL LOSS FROM NAT-CAT CONSTANTLY GROWING IN THE LAST 10 YEARS, BEING SEVERE STORMS THE MAIN CONTRIBUTORS

Nat-Cat Insured Losses 2014-1H2024 | $Bln

Verisk AAL: $151 B

2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	H1 2024
37.83	36.13	60.13	179.61	102.97	64.01	100.38	126.16	132.98	107.83	60.00

- Insured losses
- 5-year moving average
- 10-yr avg: $95 B
- 5-yr avg: $107 B
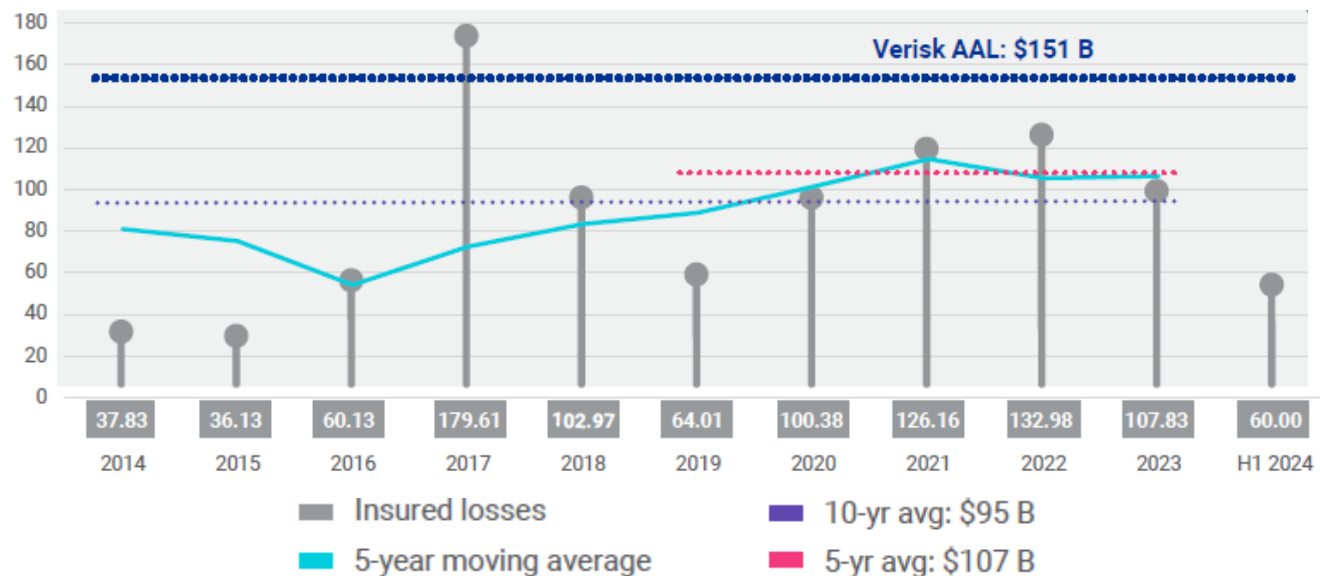
Contribution to Global Insured AAL by Peril | %

- Severe Storm[5] — 32%
- Tropical Cyclone — 24%
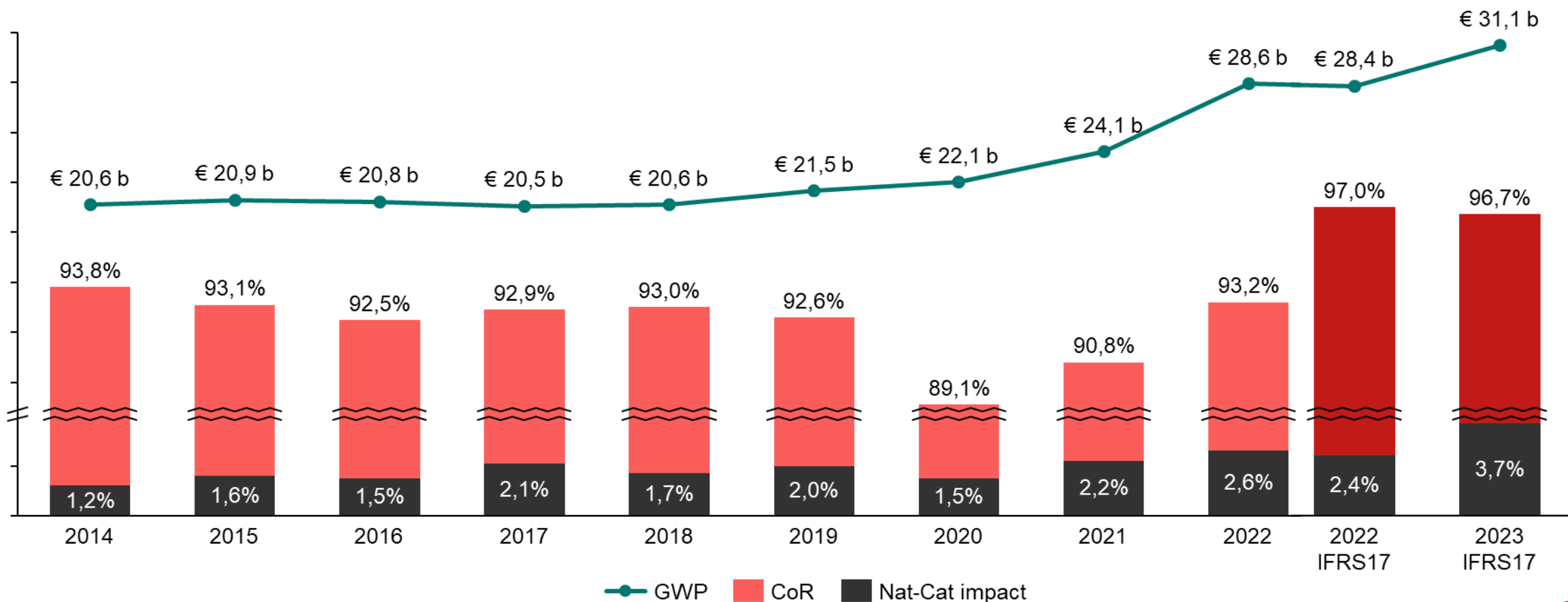- Crop — 21%
- Earthquake — 10%
- Flood — 7%
- Wildfire — 6%

5 includes Severe Thunderstorm, Winter Storm, and Extra-Tropical Cyclone models

- **Global Modeled Nat-Cat insured average annual loss (AAL) amounts to 151 $Bln**. The AAL is not an outlier since Verisk estimates such loss has a return period of 1 in 40 years

- Among the perils contributing to AAL, **Severe Storm is the main contributor**. The US alone in 2023 experienced a record setting severe thunderstorm season with 57 $Bln of total insured losses

- Climate change affects all atmospheric perils, including hurricanes, but its impact is more immediate and pronounced on wildfire, flood, and severe thunderstorms. The effects on wildfire and floods are relatively well understood, whereas **the relationship with severe thunderstorms is scientifically less established**

Source: Swiss Re Institute and Verisk 2024 Global Modeled Catastrophe Losses
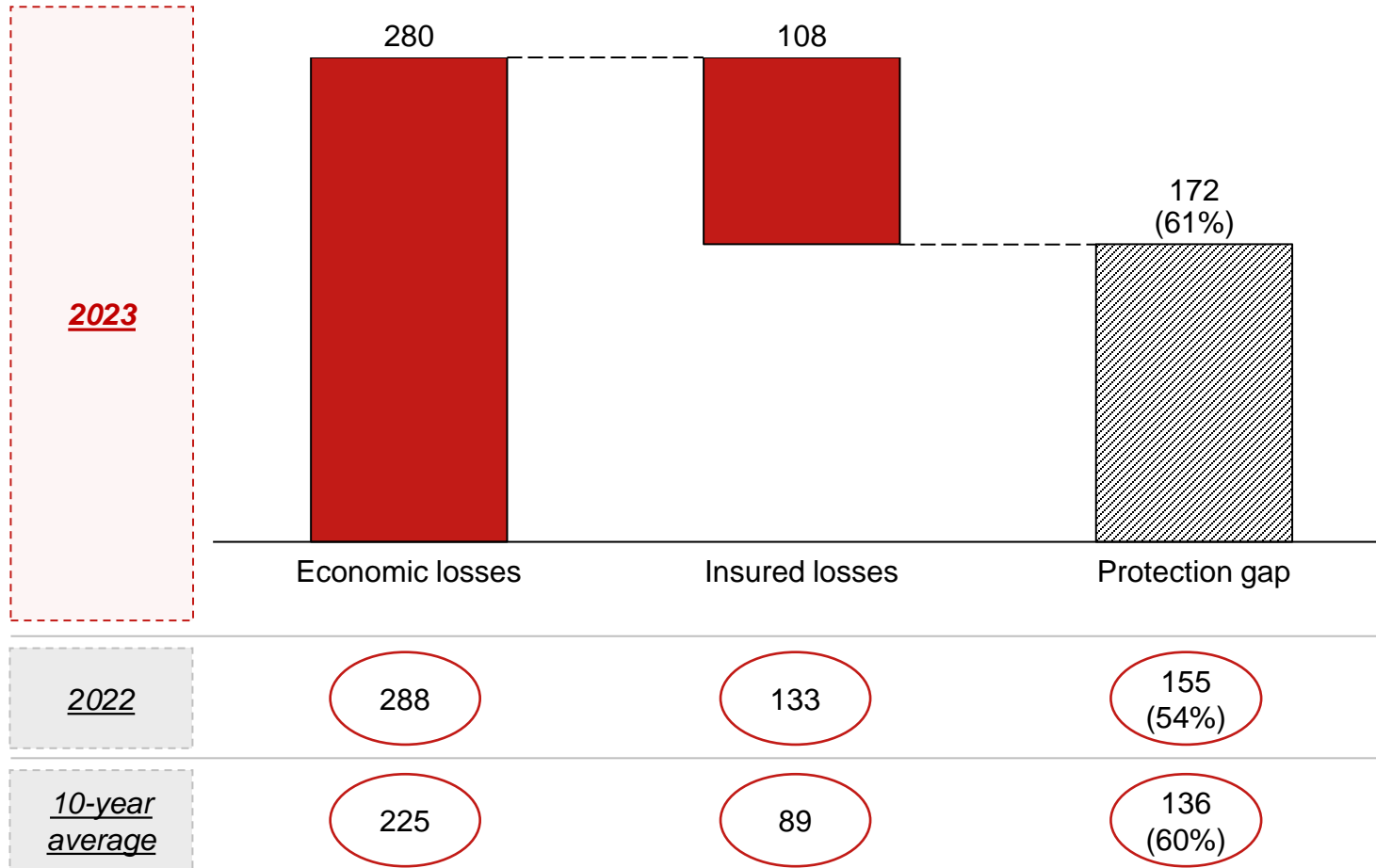
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ALSO GENERALI REPORTED THE SAME TREND AS THE GLOBAL INSURANCE INDUSTRY. IN RECENT YEARS, THE GROWTH IN VOLUMES WAS GOING ALONGSIDE WITH INCREASING IMPORTANCE OF CLIMATE RISKS

Generali P&C GWP and CoR 2014-2023

GWP values: € 20,6 b (2014), € 20,9 b (2015), € 20,8 b (2016), € 20,5 b (2017), € 20,6 b (2018), € 21,5 b (2019), € 22,1 b (2020), € 24,1 b (2021), € 28,6 b (2022), € 28,4 b (2022 IFRS17), € 31,1 b (2023 IFRS17)

CoR values: 93,8% (2014), 93,1% (2015), 92,5% (2016), 92,9% (2017), 93,0% (2018), 92,6% (2019), 89,1% (2020), 90,8% (2021), 93,2% (2022), 97,0% (2022 IFRS17), 96,7% (2023 IFRS17)

Nat-Cat impact: 1,2% (2014), 1,6% (2015), 1,5% (2016), 2,1% (2017), 1,7% (2018), 2,0% (2019), 1,5% (2020), 2,2% (2021), 2,6% (2022), 2,4% (2022 IFRS17), 3,7% (2023 IFRS17)

Legend: GWP — CoR — Nat-Cat impact

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PROTECTION GAP FROM NATURAL CATASTROPHES HIGHER THAN 170 $BLN IN 2023

Global Nat-Cat Protection Gap | $Bln

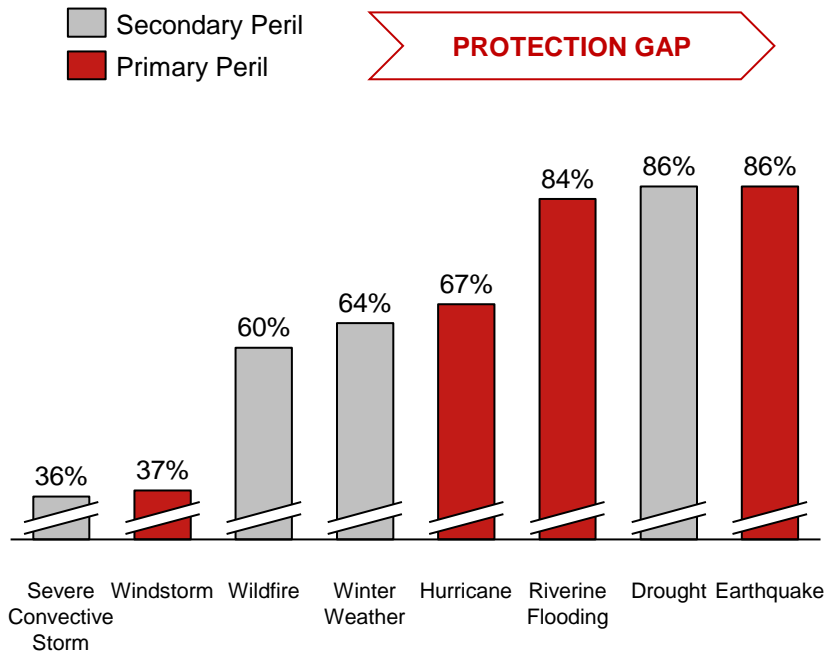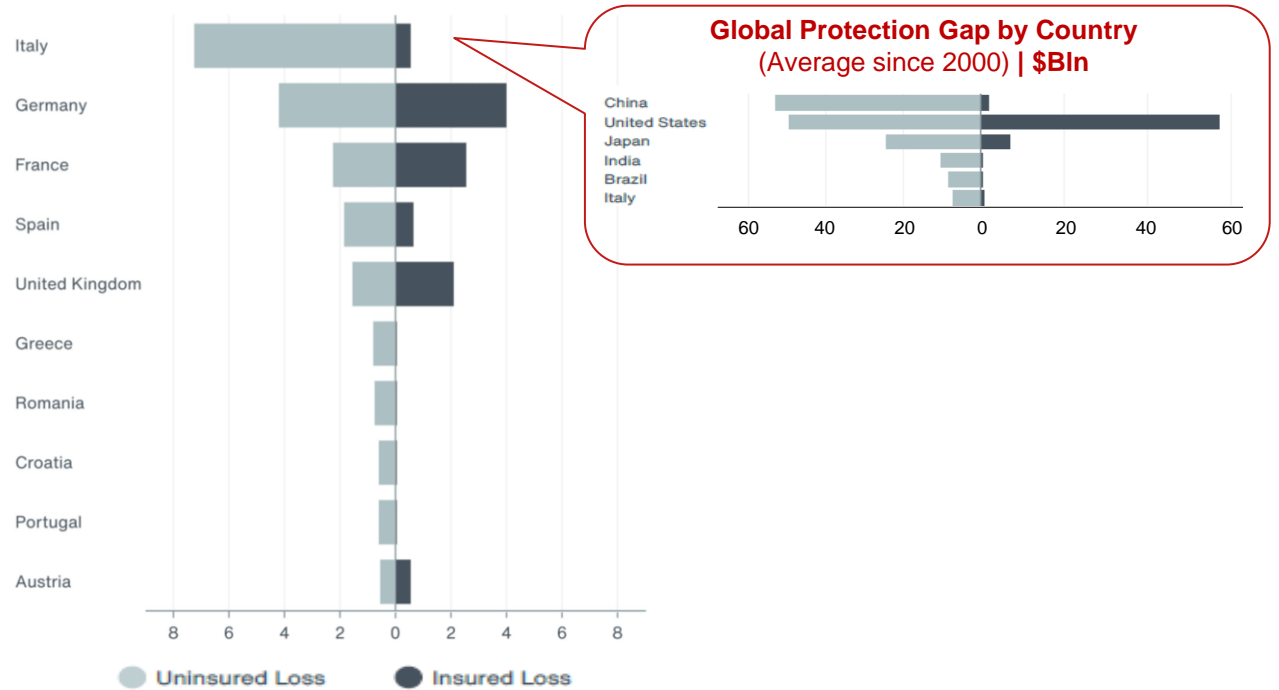| 2023			
	280	108	172 (61%)
	Economic losses	Insured losses	Protection gap
2022	288	133	155 (54%)
10-year average	225	89	136 (60%)

- **The Protection Gap is the difference between the Economic Nat-Cat Losses and the Insured Losses**

- The Protection Gap is a critical reference point for the insurance industry, financial markets and governments, as it **illustrates the financial vulnerability of communities and provides the opportunity to identify the need for new solutions**

- In both 2022 and 2023 losses caused by natural events were higher than the previous 10-years average - more than half of such losses are not insured with a **172 $Bln Protection Gap to cover globally in 2023**

- Key drivers for Protection Gap are including but not limited to:

  - People and governments' awareness of severity and frequency of climate events

  - Insurance penetration in specific country / line of businesses

  - Availability of government-sponsored insurance programmes (e.g. mandatory coverage for enterprises in Italy)

Source: Swiss Re Institute

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NATURAL CATASTROPHES PROTECTION GAP DIFFERS SIGNIFICANTLY IN TERMS OF PERIL AND COUNTRY

Protection Gap by Peril
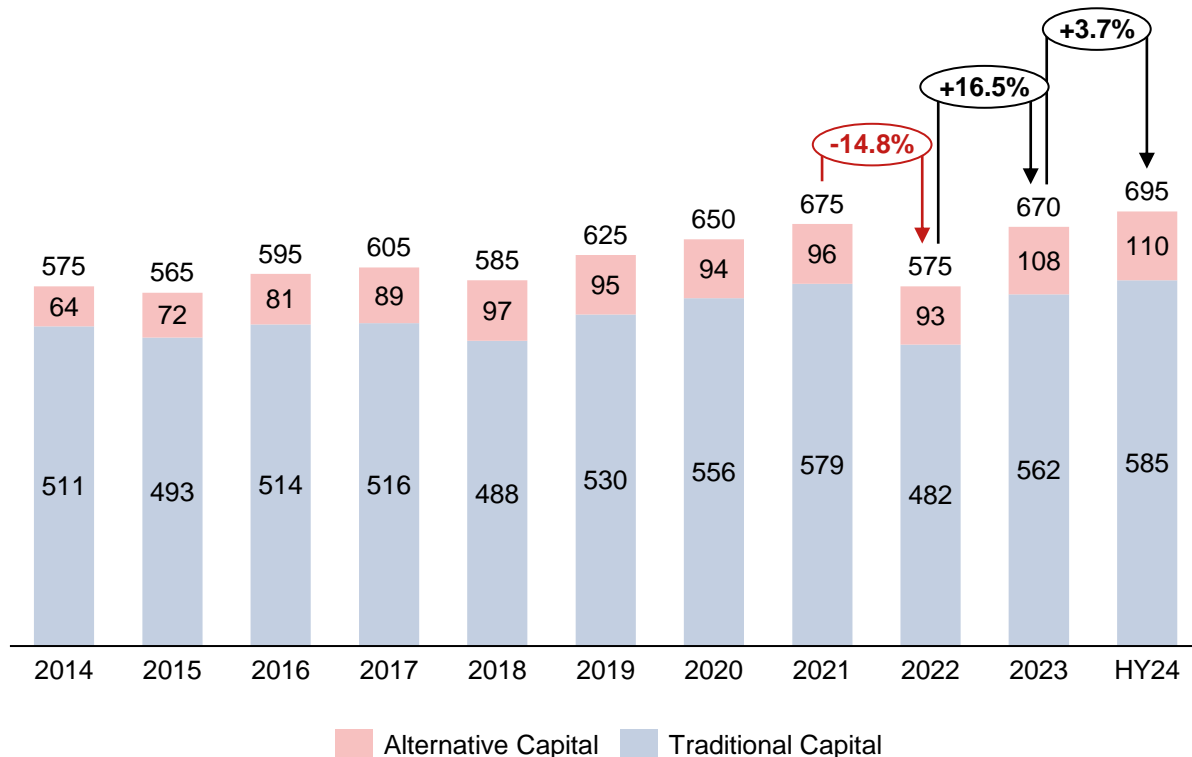(Cumulative between 2000 and 2022) **| %**

European Protection Gap by Country
(Average since 2000) **| $Bln**

Global Protection Gap by Country
(Average since 2000) **| $Bln**

- The highest insured losses are consistently found in the United States and reached 80 $Bln in 2023. However, a large portion of disaster losses remains uninsured even in this market. On average, the largest volume of losses that goes uninsured results from natural disasters in China with 54 $Bln of uninsured losses per year on average and less than 2 $Bln typically insured.
- In addition to region-specific protection gaps, there are key differences between perils with Drought and Earthquake being the ones with the highest gap while Severe Convective Storm displays the smaller one, potentially explaining high insured losses for this peril
- **Based on 2000-2023 average, Italy is the 7th country in the world and the 1st in Europe** for both Economic Losses and Protection Gap

Source: Aon Catastrophe Insight (2024)

TRADITIONAL REINSURANCE STILL THE MAIN RISK TRANSFER SOLUTION, YET HARDENING MARKET LEADS TO ALTERNATIVES GAINING TRACTION

Global Reinsurance Capital | $Bln

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	HY24
Total	575	565	595	605	585	625	650	675	575	670	695
Alternative Capital	64	72	81	89	97	95	94	96	93	108	110
Traditional Capital	511	493	514	516	488	530	556	579	482	562	585

-14.8% +16.5% +3.7%

Alternative Capital Traditional Capital

- **At 2024 renewal, buyers experienced a challenging reinsurance market** with significant price increases mainly for programs and regions that ceded severe losses in 2023

- **The partial recovery of traditional capital** compared to previous year eased the negotiations especially on large and **long-standing relations** or on **contracts with low loss probability**

- **Deglobalization, rising civil unrest and conflicts** increased Reinsurers' concerns about further possible losses. The developments in Ukraine and Middle-East are increasing risk expectations for higher cost of goods and capital

- Thus, **alternative risk transfer techniques** (e.g., Catastrophe Bonds) **are becoming more popular**, with demand on the buy-side driven by higher yields

- **Cat Bonds are set to achieve new record levels**, and are ever more sponsored by reinsurers to secure retro capacity

Source: Aon's Reinsurance Solutions / Aon Securities Inc.

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REINSURERS MANAGED TO REDUCE THEIR SHARES ON INDUSTRY NAT-CAT LOSSES DUE TO TIGHTENING OF TERMS & CONDITIONS AND UNDERWRITING DISCIPLINE

Top Reinsurers share of Total Industry Nat-Cat Losses | %
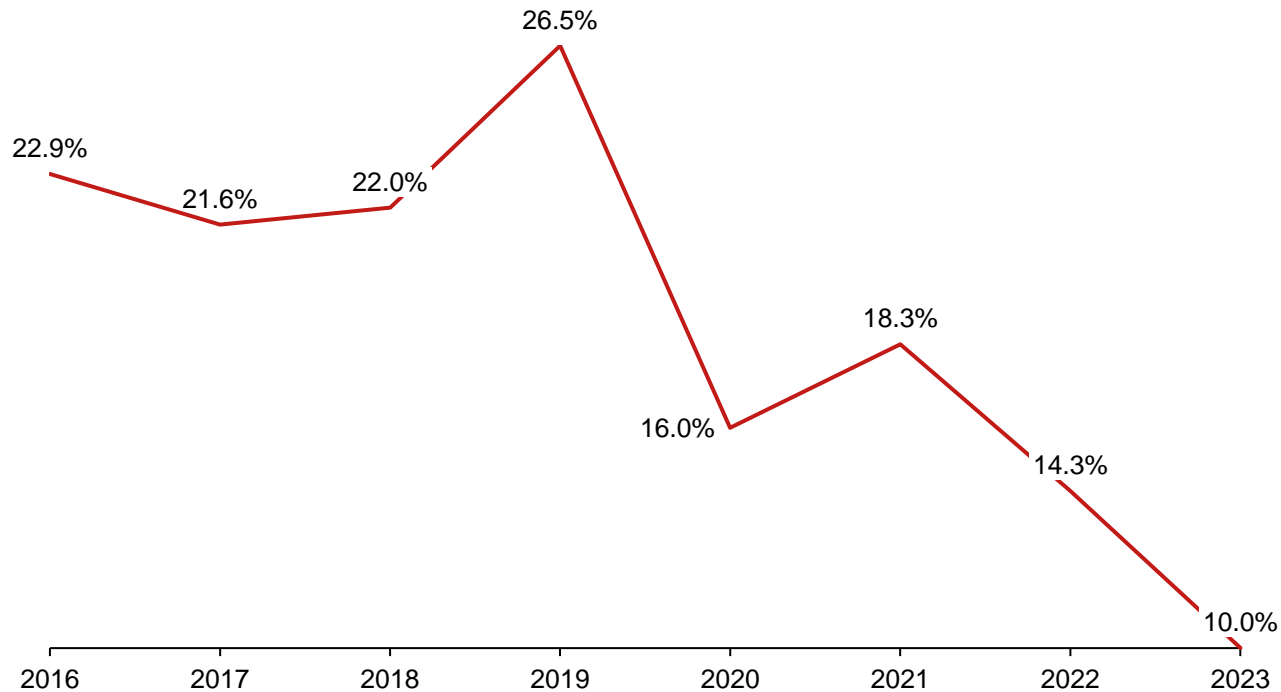
REINSURERS ACTIONS ON NAT-CAT

- Reduced exposure to lower-return periods
- Tighter terms and conditions
- Reduced aggregate covers
- Repricing of risk

Source: S&P

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IN ADDITION, A KEY TO ENSURE COVERAGE ARE PUBLIC PRIVATE PARTNERSHIPS (PPPs)

With **catastrophes becoming more frequent and more severe**, the **necessary repricing of risks might lead** to insurance becoming unaffordable and thus to an **increase of the protection gap**
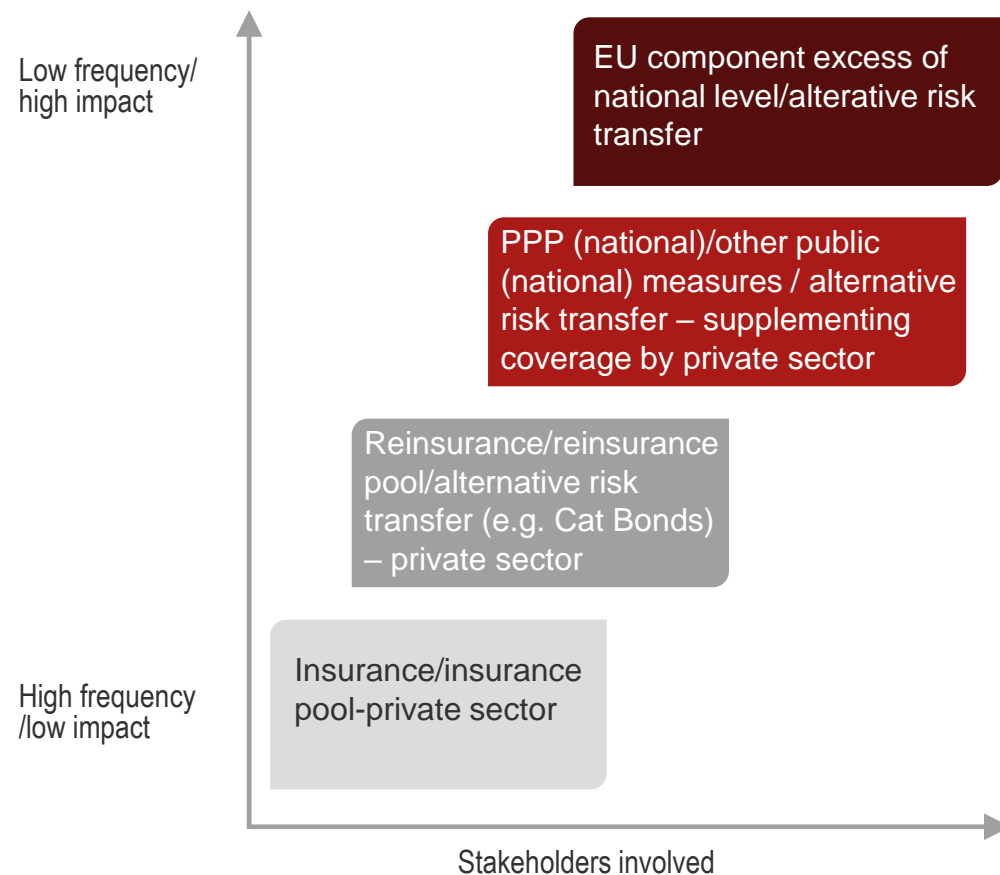
Insurers, Reinsurers, Financial Markets and Public Sectors must work together to **ensure an effective risk transfer mechanism necessary to provide cover**

The ECB and EIOPA in a joint study have recommended this ladder approach and even suggested the **creation an EU-wide component of protection on top of national PPPs**

The ladder approach to catastrophe insurance

Low frequency/ high impact

High frequency /low impact

EU component excess of national level/alterative risk transfer

PPP (national)/other public (national) measures / alternative risk transfer – supplementing coverage by private sector

Reinsurance/reinsurance pool/alternative risk transfer (e.g. Cat Bonds) – private sector

Insurance/insurance pool-private sector

Stakeholders involved

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ACROSS MANY MARKETS DISCUSSIONS ARE ONGOING TO MANDATE NAT-CAT COVERAGE; ALREADY IN PLACE IN FRANCE AND ITALY FROM 2025

✓ Mandatory cover   ✓ Specific proposal in place   ✓ Some discussion ongoing with no specific proposal   ✗ Not mandatory / No ongoing discussion

Italy ✓ Legge di Bilancio 2024: Approved legislation requiring Nat-Cat risk cover for enterprises protecting against damage to tangible assets (e.g. buildings, machinery and goods)

Germany ✓ Upper-house of parliament in discussions to mandate Nat-Cat coverage insurance however no specific proposal put in place yet

For the Retail segment, German insurers suggest an opt-out model, where coverage would be offered in the standard insurance, but home-owners could opt-out

Czech Republic ✗ Currently, there is no existing or planned legislation regarding Nat-Cat coverage

France ✓ Compulsory to buy Nat-Cat coverage for Property

Austria ✓ The Chamber of Commerce of Styria (member state of Austria) suggested a compulsory cover. There is no specific legislative proposal put in place yet

Spain ✗ Compulsory to sell, with state support existing covering claims linked to extraordinary risks including, among other, Nat-Cat / severe weather conditions

Poland ✓ No clear local discussion however at EU level currently reviewing the Environmental Liability Directive, which has substantial effect on environmental liability insurance incl. mandatory insurance, also covering certain man-made catastrophes

Portugal ✓

Switzerland ✓ Property insurance for fire and natural catastrophes is required in most Cantons. Previous conversations occurred around also mandating Nat-Cat related business interruption however it did not advance

India ✓ Regulatory authority IRDAI has had some discussions regarding mandating climate related covers however no proposal has been put in place yet

Source: Press search

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