Insurance as the Green Enabler

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"… Climate change is a not financial risk that we need to worry about…the more the phrase climate catastrophe is mentioned, the higher prices go up…"

Stuart Kirk, (ex) Head HSBC Global Asset Management, (FT Live, 2022)

"… Climate change is real, but I do not believe it poses a serious risk to the safety and soundness of large banks or the financial stability of the United States… I believe risks posed by climate change are not sufficiently unique or material to merit special treatment relative to others"

Gov. C. Waller, US Federal Reserve, (FRB , 2023)

Why should the insurance industry be concerned with climate change

A vested interest in limiting physical, transition and liability risks

Physical Risk

- Property damage & disruption of trade from climate perils such as flood, storms, sea level rise and tropical cyclones

Transition Risk

- The insurance industry is a large institutional investor – collectively holding more than USD 10 trillion in assets, and susceptible to sudden changes in regulations/ carbon taxes/ technology.

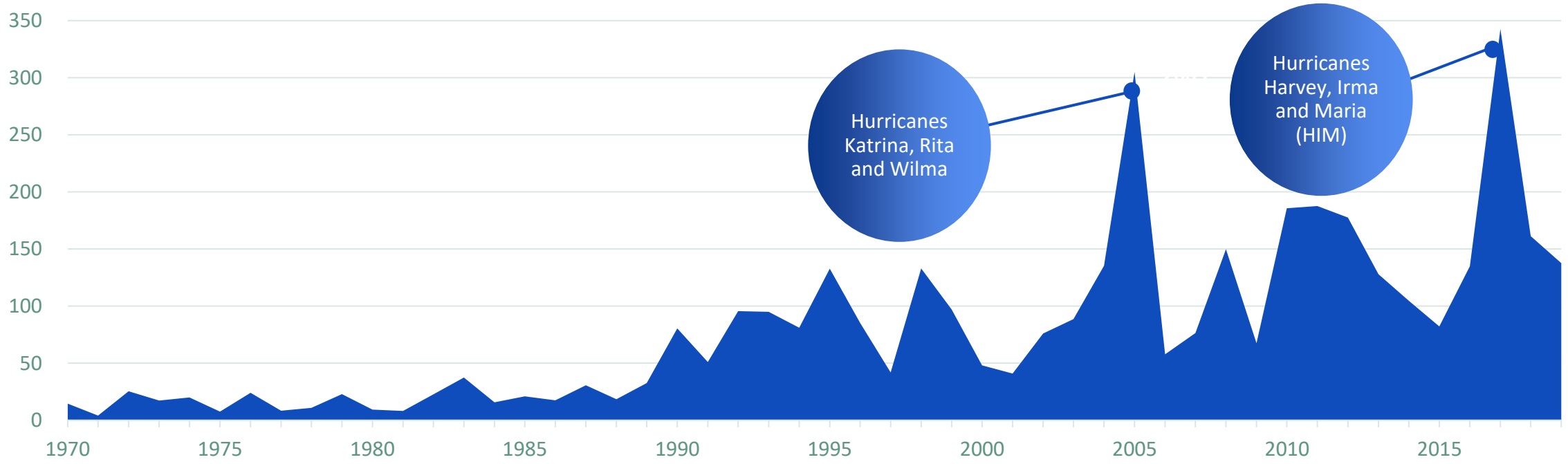
Liability Risk

- Pay-outs for customers sued for climate negligence
- Risk of lawsuits for insurers who continue to support polluting industries

Economic Loss Trends in Climate Perils

There has been an observed increase in climate related economic losses

Global Economic Losses, 1970 to 2019, US $b (norm. 2019)

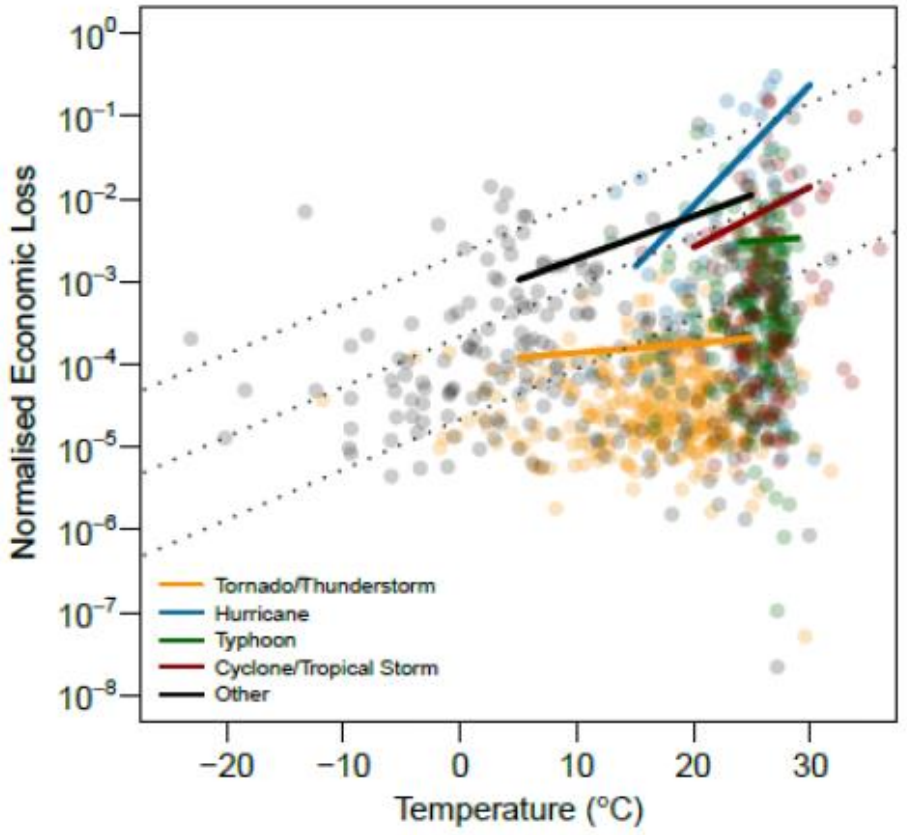


Source: Swiss Re Sigma

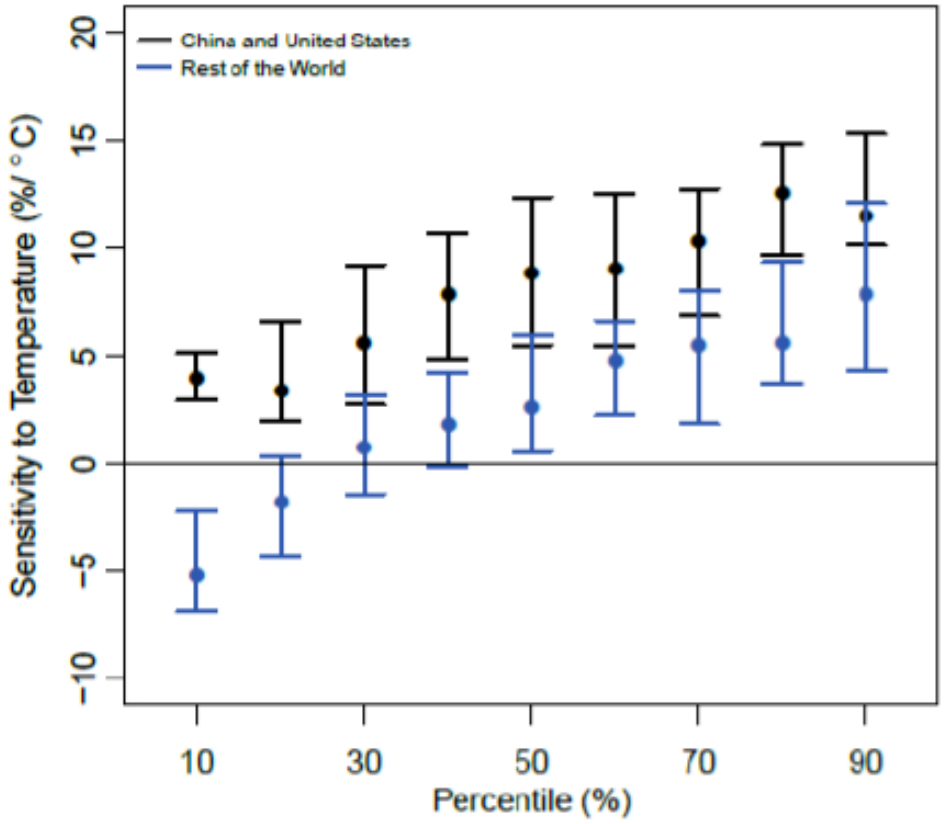
Economic Loss Trends in Climate Perils

Recent research has shown that storms are 15% more damaging per degree increase in temperature

Economic loss sensitivity of perils to temperature



Sensitivity of storms to temperature by percentile



Source: Wasko and Pui, Linking temperature to catastrophe damages from hydrologic and meteorological extremes, Journal of Hydrology , 2021

How does physical climate risk impact a property (re)insurer

Through increased claims burden, shrinking risk pools and more punitive capital regimes..

Increased frequency and severity of extreme weather events

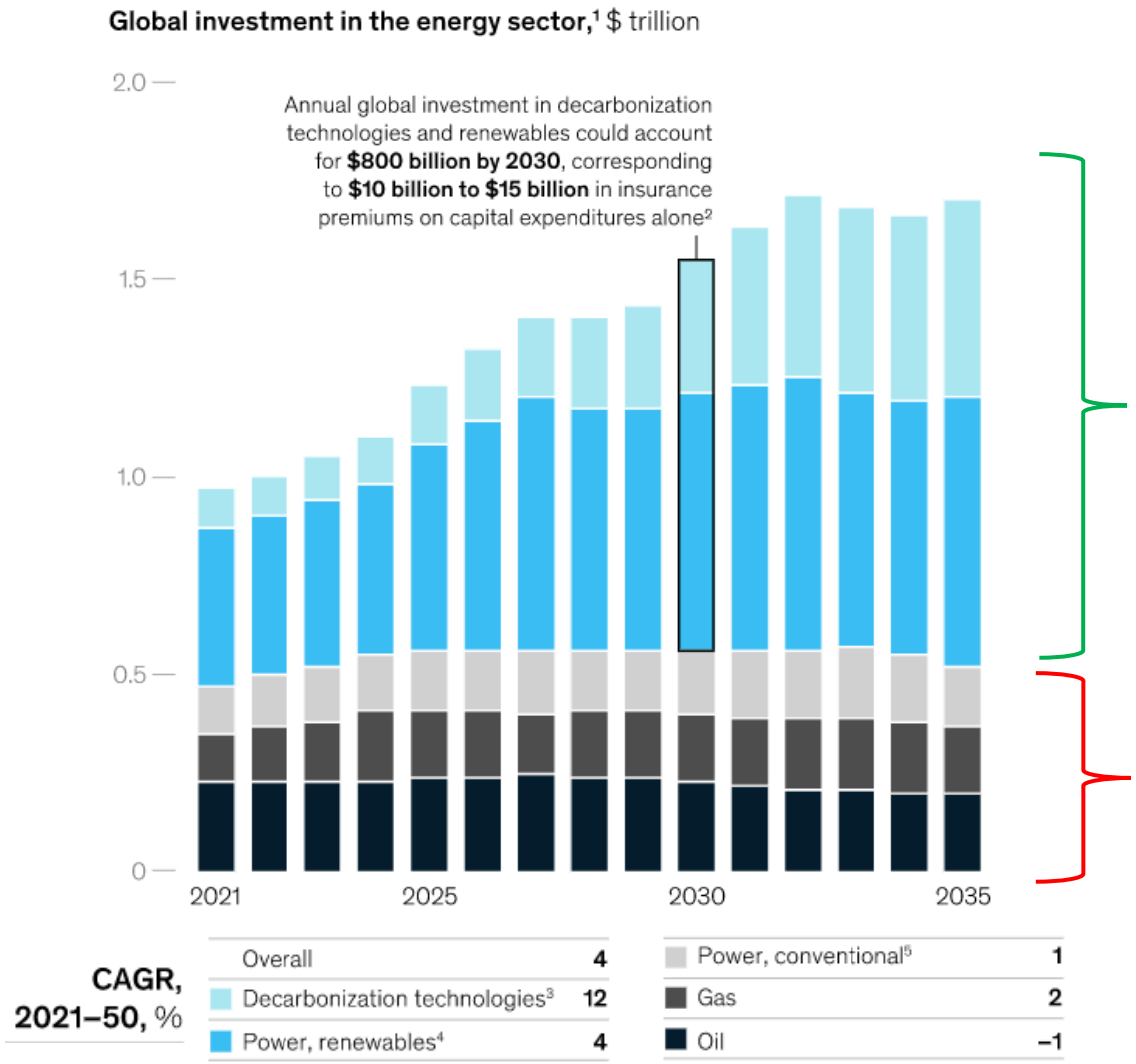
Aggregate weather-related losses (i.e. including uninsured losses) around the world have risen from an annual average of $50 billion in the 1980s to over $200 billion over the past 10 years

Impact on Profitability

Claims	Premiums	Solvency Ratio
• Increased claims burden • Reserving challenges	• Challenging rate adequacy • Take up rates may fall if premiums increase	• Revised risk appetite • Regulatory requirements

Driving industry changes through underwriting and investment

Removing support for fossil fuel driven industries, and supporting green sectors



- **Supporting green sectors through:**
  - Underwriting
  - Responsible Investment
  - Beyond energy sector, supporting investment and underwriting in resilience infrastructure

- **Withdrawing support to polluting industries through:**
  - Underwriting embargoes
  - Adopting responsible investment principles that exclude investment in new oil and gas, coal and other polluting sectors.

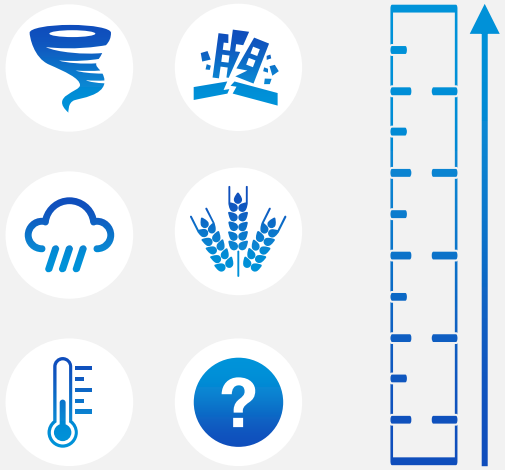
Source: Mckinsey

Emerging climate risks call for the creation of new risk transfer methods and products

Parametric Risk Transfer is a good example of creative use of independent 3rd party data sources

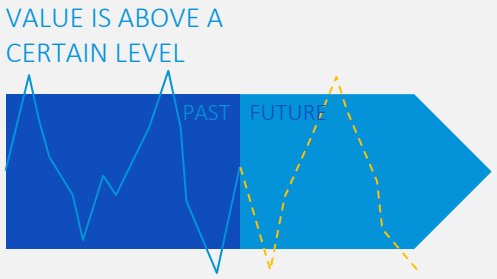
1

The parameters of these exposures can be measured



2

An index is agreed or designed
to trigger the policy once the pre-agreed threshold is met or exceeded



3

Upon triggering

LIQUIDITY AS AND WHEN NEEDED

4

Within 30 days

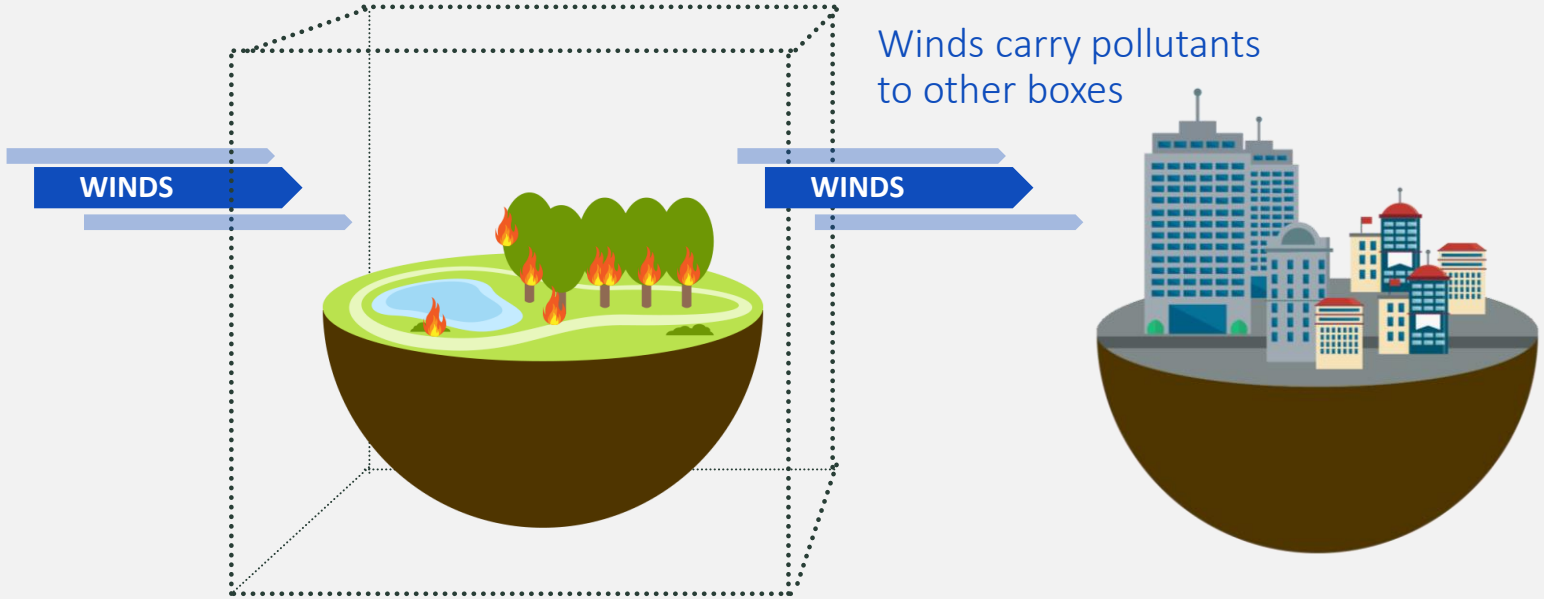
YOUR BUSINESS RECEIVES A PAYOUT

HazeShield: Example of an innovative collaboration between Swiss Re and Harvard University

Leveraging an atmospheric transport model to develop view of South East Asian smoke pollution (haze)

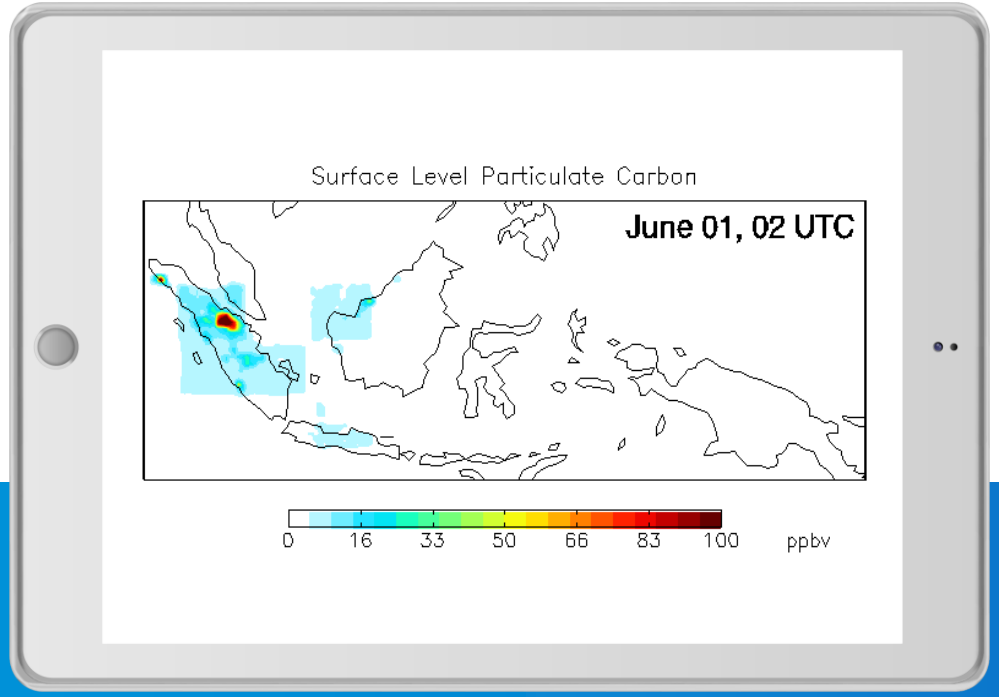
The GEOS-CHEM atmospheric transport model helps to better understand the haze phenomenon, including:

- Its evolution into the future
- Hind casting haze concentrations in Singapore as far back as satellite imagery allows

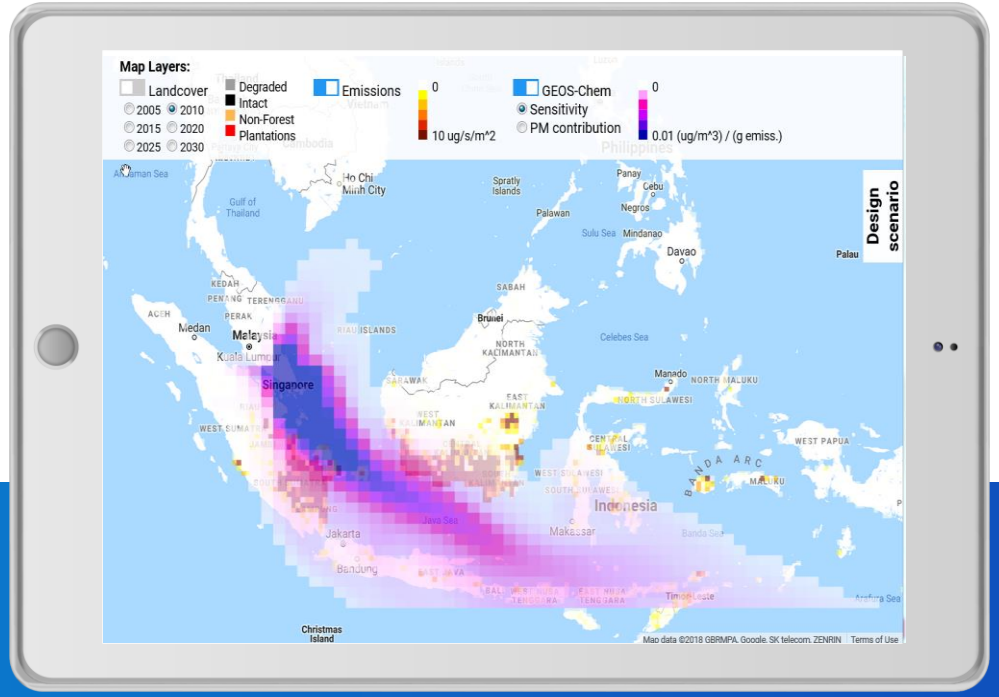


Simulation of Haze Risk throughout the region

A robust risk model requires high quality data inputs, and sound expertise



GEOS- CHEM simulation of Haze concentrations during the 2015 Indonesian Forest Fires



Leveraging GEOS-CHEM capability to assess how sensitive Singapore haze concentrations are to burning in Indonesia

HazeShield responds to a market protection gap (NDBI)

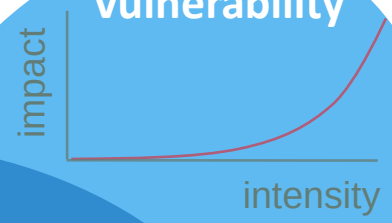
The research collaboration resulted in the world's first haze parametric solution

Trigger	Reporting agent	Pre agreed pay-out
Pollutant Standard Index (PSI)	National Environmental Agency (NEA) of Singapore	• Cumulative unhealthy days • Extreme days

Sharing of Risk Insights: Open Source Catastrophe Modelling (CLIMADA)

Supporting broader financial services industry and beyond with climate risk insights

Resilience measures
(for example:
prevention, spatial planning,
building codes ...)

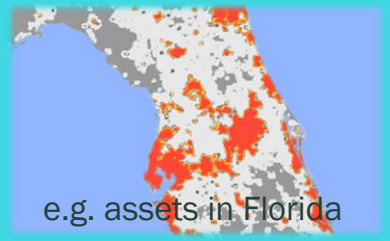


weather
→ hazard

CLIMADA
probabilistic
event-based
simulation[1]

climate scenarios

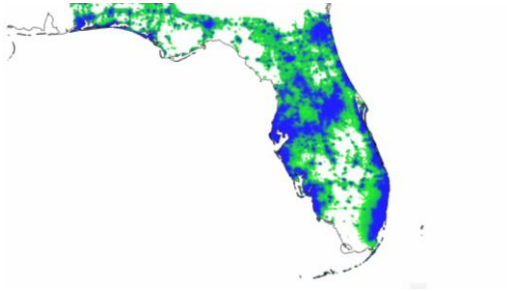
development scenarios



exposure

Outputs:
Risk analysis, -mapping
+ (impact-oriented)
warnings ...

Example – Florida TC impact



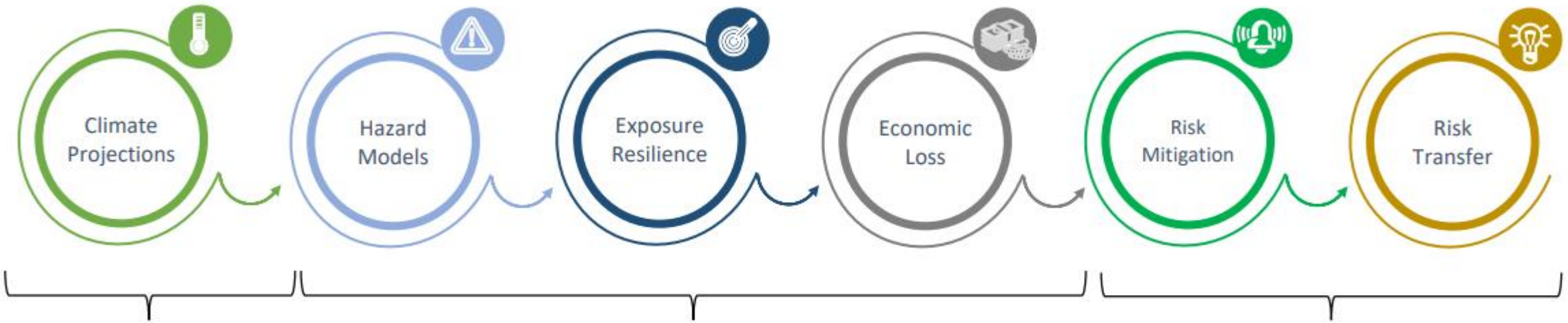
+ appraisal of resilience measures / options (effectiveness of options, cost/benefit ...)
+ Quantification of uncertainty

CLIMADA
Economics of Climate Adaptation

1 Aznar-Siguan & Bresch, 2019: CLIMADA ... weather and climate risk assessment ..., https://doi.org/10.5194/gmd-12-3085-2019

An integrated approach to Physical Climate Risk Management adds economic value

Using climate change projections, catastrophe modelling expertise and risk transfer together to improve resilience



- Driven by climate policy, technological change, latest scientific findings
- Catastrophe Modelling of physical assets, insurers traditionally have expertise in this domain
- Take pro-active decisions to manage climate physical risk

Key Challenges

Key challenges include short termism, status quo bias, uncertainty in climate projections, and silo mentality…

Risk assessing the unknown
As climate risk is non-stationary, Past loss experience may not be predictive of the future

Uncertain climate policy
Climate policy remains fluid and pegged to election cycles, making it hard to develop business strategy

Challenges in maintaining public commitments
Evidenced by departure of several founding members of the NZIA

Collaboration across the board
Real progress can only be achieved by braking down formidable silos