



Adapting to Extreme Events

Luxembourg, 27 May 2015





Swiss Re

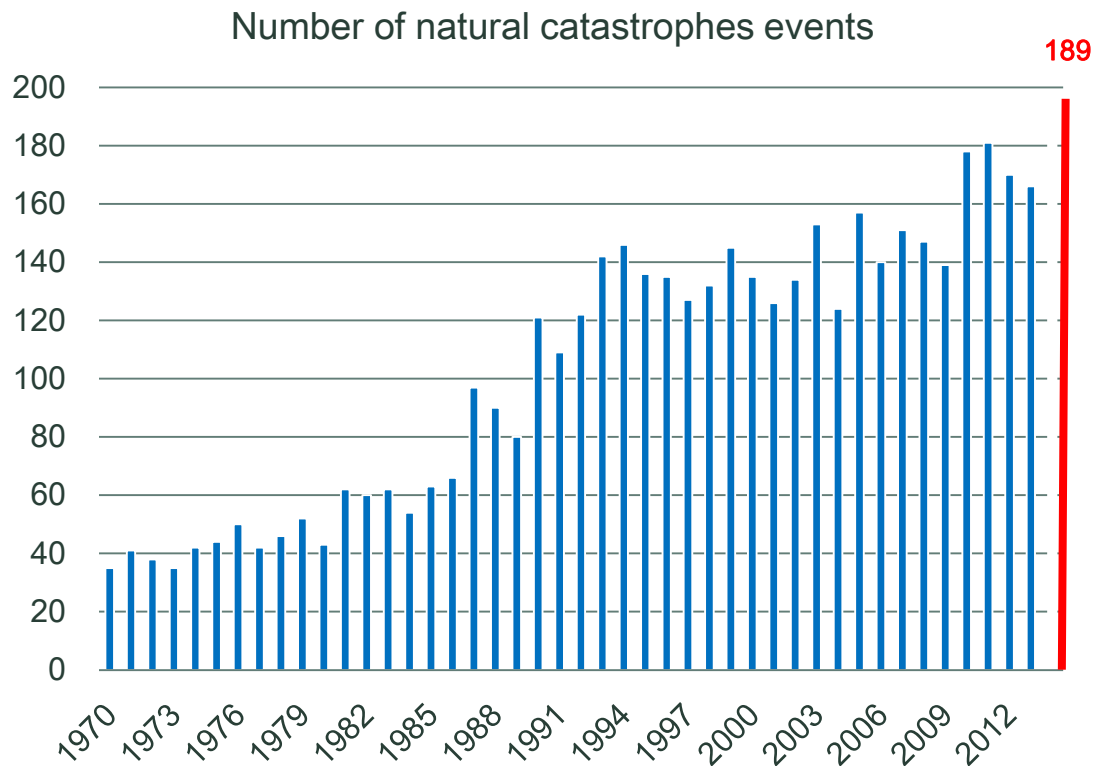
- Adapting to Extreme Events
- Why is adaptation important?
- What role does insurance play?

Jean-Jacques Henchoz, Regional President EMEA, Swiss Re

Insurance Europe Conference
Luxembourg, 27 May 2015



Increasing frequency of extreme events



Monsoon floods in India and Pakistan

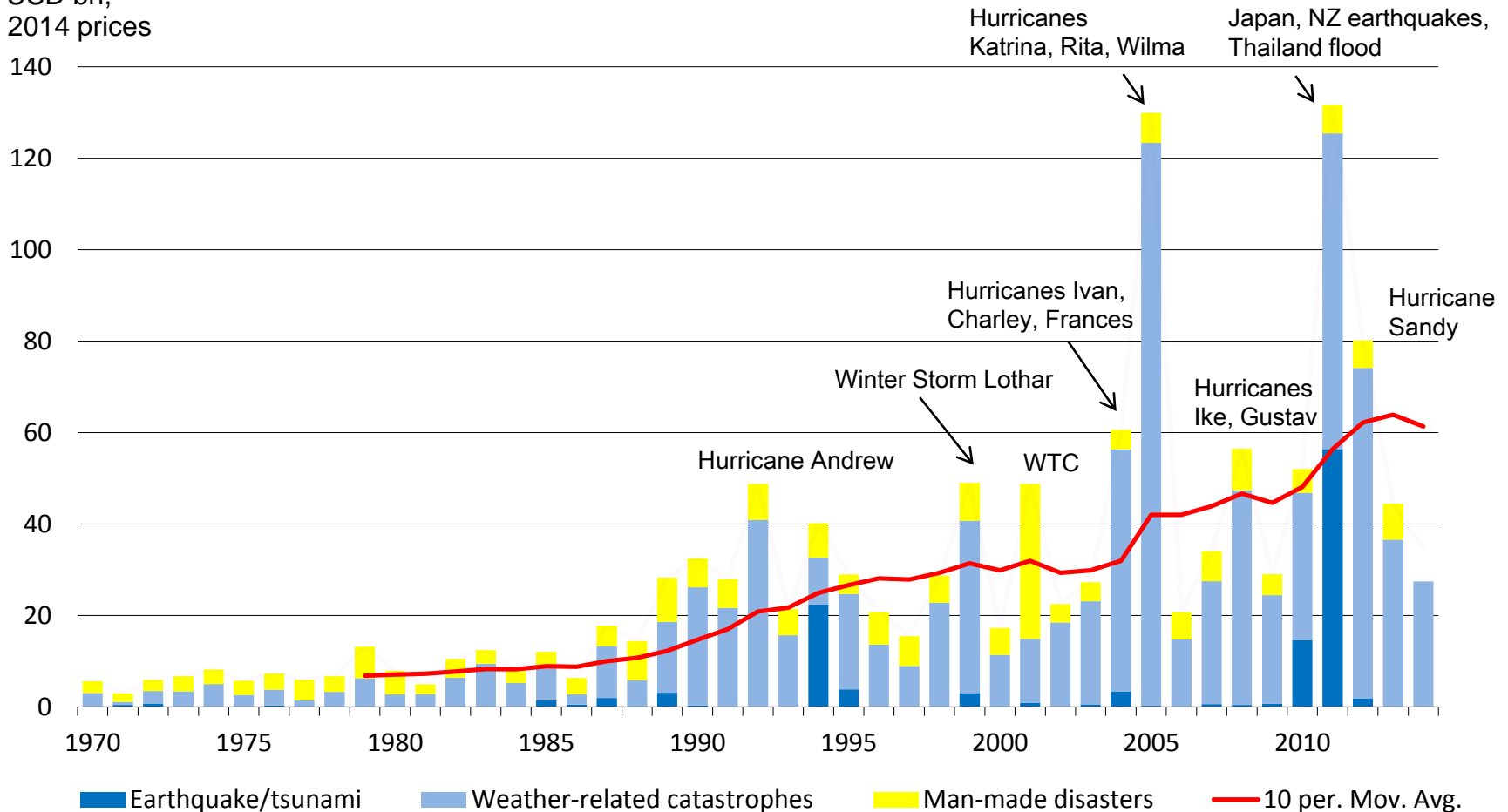


Winter storm in Japan

- 2014: a record year in terms of number of extreme events.
- Convective and winter storms generated most losses.

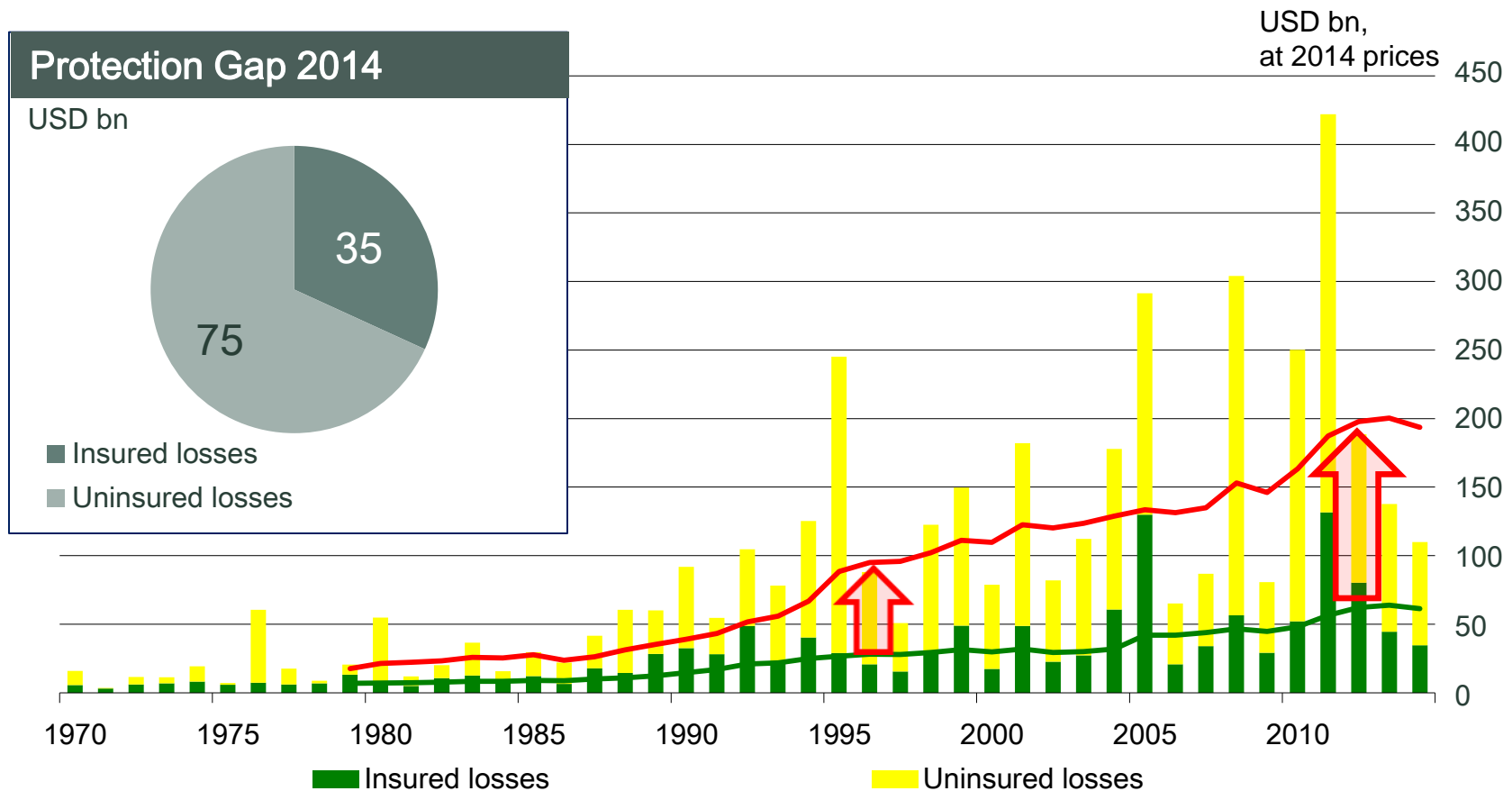
With increasing severity in recent decades

in USD bn,
at 2014 prices



- Adaptation is crucial in reducing economic losses and the human cost of disasters.
- Mitigation measures, e.g. early warning systems, are part of this adaptation.

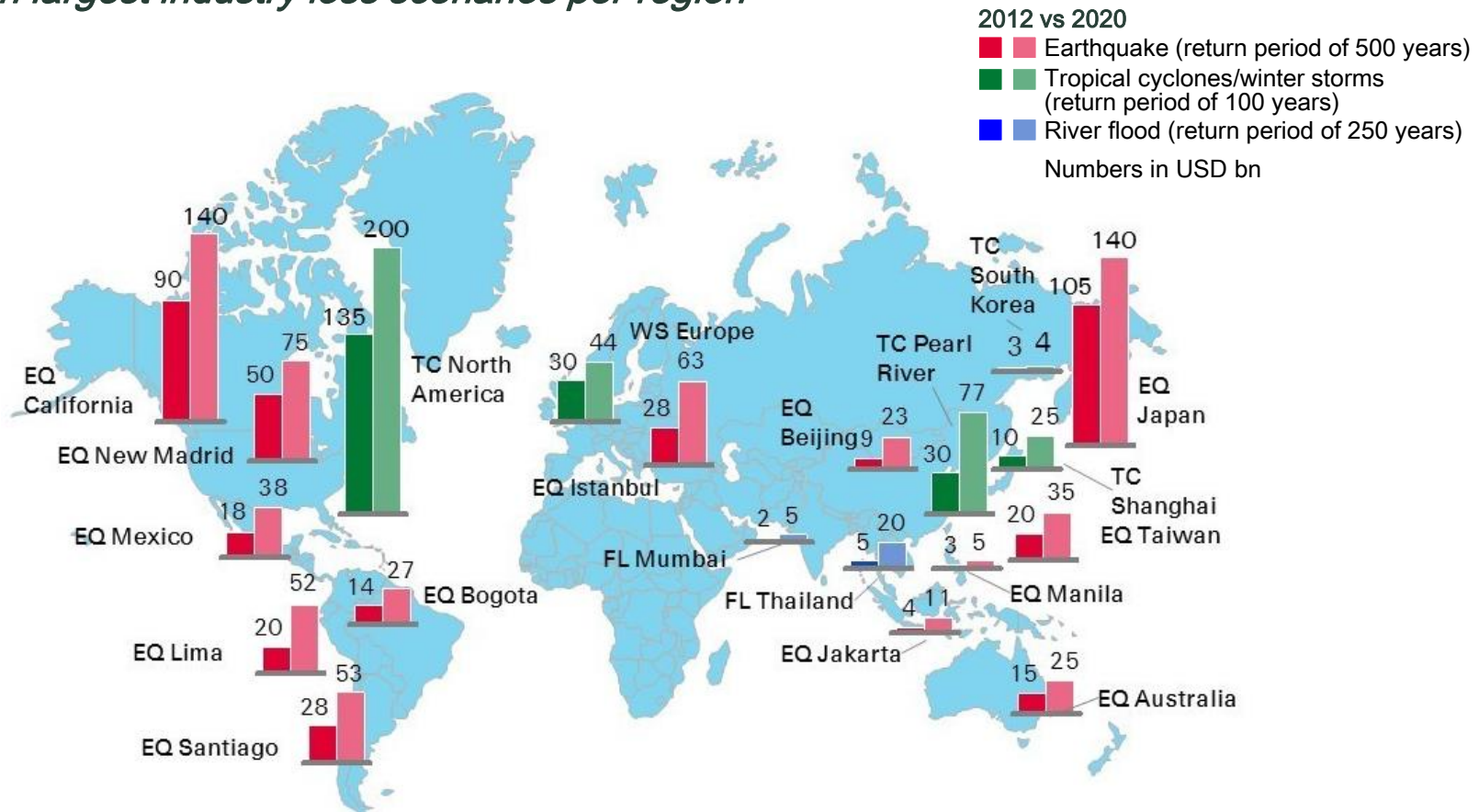
Protection gap widening as economic losses keep rising



- Economic losses from the recent Nepal earthquake are estimated to be up to USD 10bn.
- Nepal's largest reinsurer so far estimates its own insured losses to be USD 160m.

Property natural catastrophe exposure and concentration increasing in cities around the globe

Increase in largest industry loss scenarios per region



- Risk transfer through insurance is part of adaptation.
- Growth in exposed economic values, especially in urban areas, increases the need for insurance.

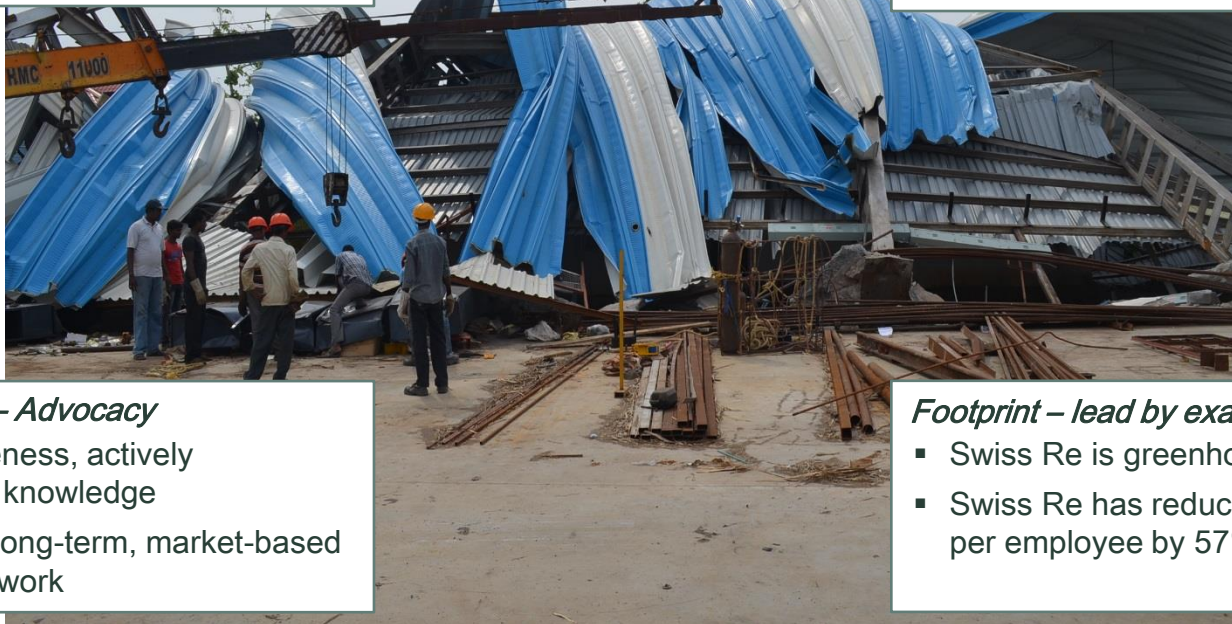
Insurers need to play a leading role in public discussions on climate change

Risk intelligence – assess the risk

- Experts in quantifying climate change risk
- Integrate climate change risk into underwriting and risk management

Business solutions – seize opportunities

- Promote risk transfer as a way of becoming more resilient
- Develop appropriate solutions for adapting to and mitigating climate change



Risk dialogue – Advocacy

- Raise awareness, actively disseminate knowledge
- Advocate a long-term, market-based policy framework

Footprint – lead by example

- Swiss Re is greenhouse neutral
- Swiss Re has reduced its emissions per employee by 57%

- The insurance industry can incentivise measures to tackle climate change and reduce the frequency and severity of extreme events.

Governments and private institutions joining forces will have the biggest impact

Existing natural catastrophe schemes introduced by governments

Public Assets



*Mexico: FONDEN
fund for natural
disasters*



*Caribbean:
Caribbean
Catastrophe Risk
Insurance Facility
(CCRIF)*

Private Assets *Public Insurance Programs*



*New Zealand:
Earthquake
Commission
(EQC)*



*Turkey:
Turkish
Catastrophe
Insurance Pool*

Private Assets *Reinsurance Programs*



*UK: Flood Re
national flood
pool*



*Japan: Japan
Earthquake
Reinsurance*

- Managing the risk in a forward looking way will be more cost effective in the long-run.
- Cost of climate change could increase to around 20% GDP by 2030 in some regions.
- Adapting to climate change is an economic necessity.



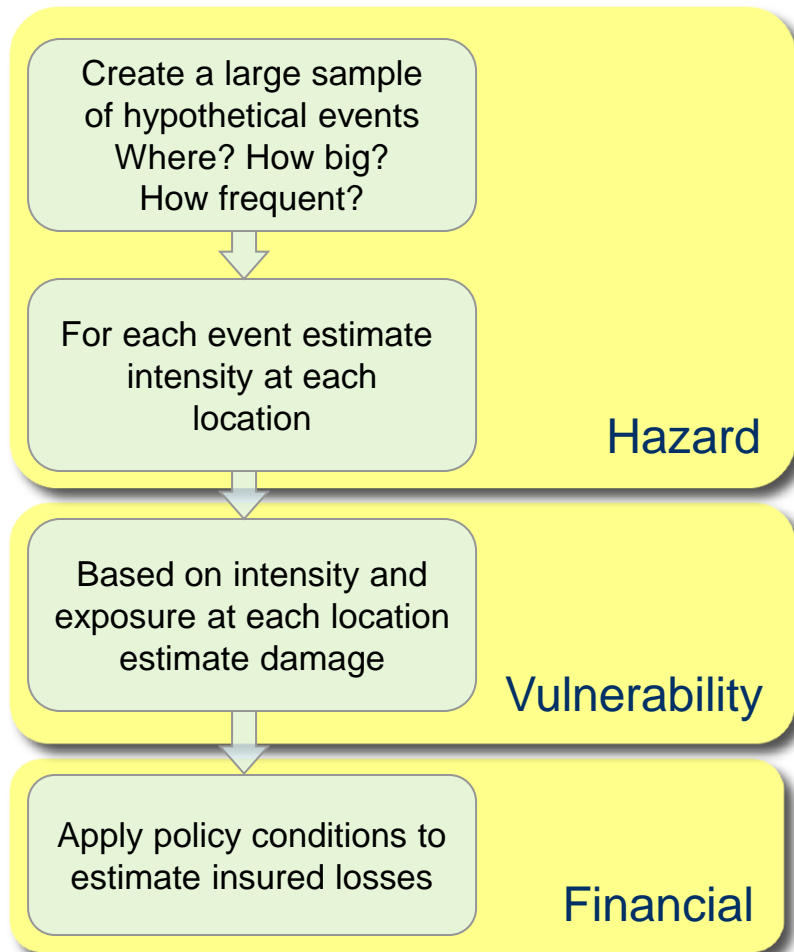
Insurance Europe 7th International Insurance Conference

**The Globalization of the Insurance Industry
Adapting to Extreme Events
Developments in Modeling**

Catastrophe Modeling—Ripe for Change

- **Traditional models no longer effectively and efficiently informing insurers about catastrophe risk**
 - Model assumptions are “secret” so insurers cannot see what’s really driving their loss estimates
 - Users **waste** a lot of time and money trying to “infer” the model assumptions with “contrived” analyses of model output (process starts all over again with next model update)
- **Duopoly of modeling companies stifling innovation and leading to inefficient processes and higher costs to insurers and consumers**
 - Insurers are now expected to “own the risk” but model vendors have not designed for this
 - Disruptive and costly changes to models driven by modeling companies changing assumptions and not new science or facts
- **Over-reliance on a few numbers from the model output (100, 200, and/or 250 year exceedance probabilities)**
 - Gives a false of security
 - Leads to surprise losses and potential insurer insolvencies
 - Limits global insurance coverage
 - Increases systemic risk

The Solution: RiskInsight® Open Loss Modeling Platform



- Starts with same components as traditional models
- Model components fully transparent
- Model assumptions accessible and customizable
- Two ways to create your own proprietary view of risk
 - Customize Reference Models
 - Build new models
- Efficiently understand the **risk**, control model assumptions, and manage your loss potential

Why New Risk Metrics?

- PMLs (point estimates—VaRs—from EP curves, e.g. 100, 200, 250 year) are not intuitive, are volatile and misunderstood, give a false sense of security, and are not operational
- TVaR is better but doesn't provide clarity to underwriters and senior executives and includes very extreme and sometimes “wacky” events
- Characteristic Events (CEs) where probabilities are based on the hazard (rather than the loss)
 - Intuitive and meaningful to underwriters and senior executives
 - Consistent from year to year
 - Operational
 - Identify exposure concentrations and “hot spots”
 - Manage “informal” risk tolerance (i.e. where you can have an outsized loss relative to competitors)

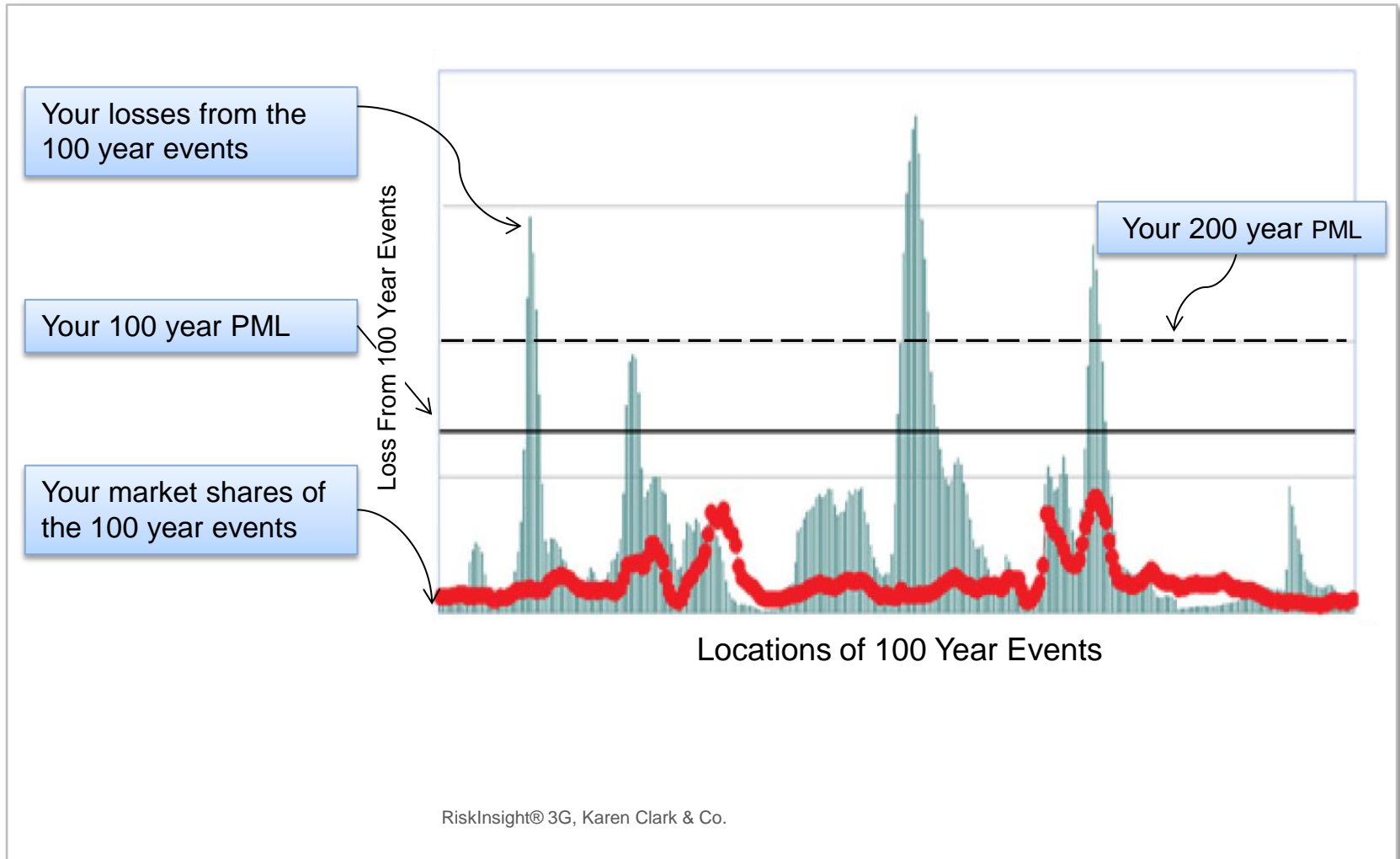
What You Get Without RiskInsight® and CEs

Your PML is

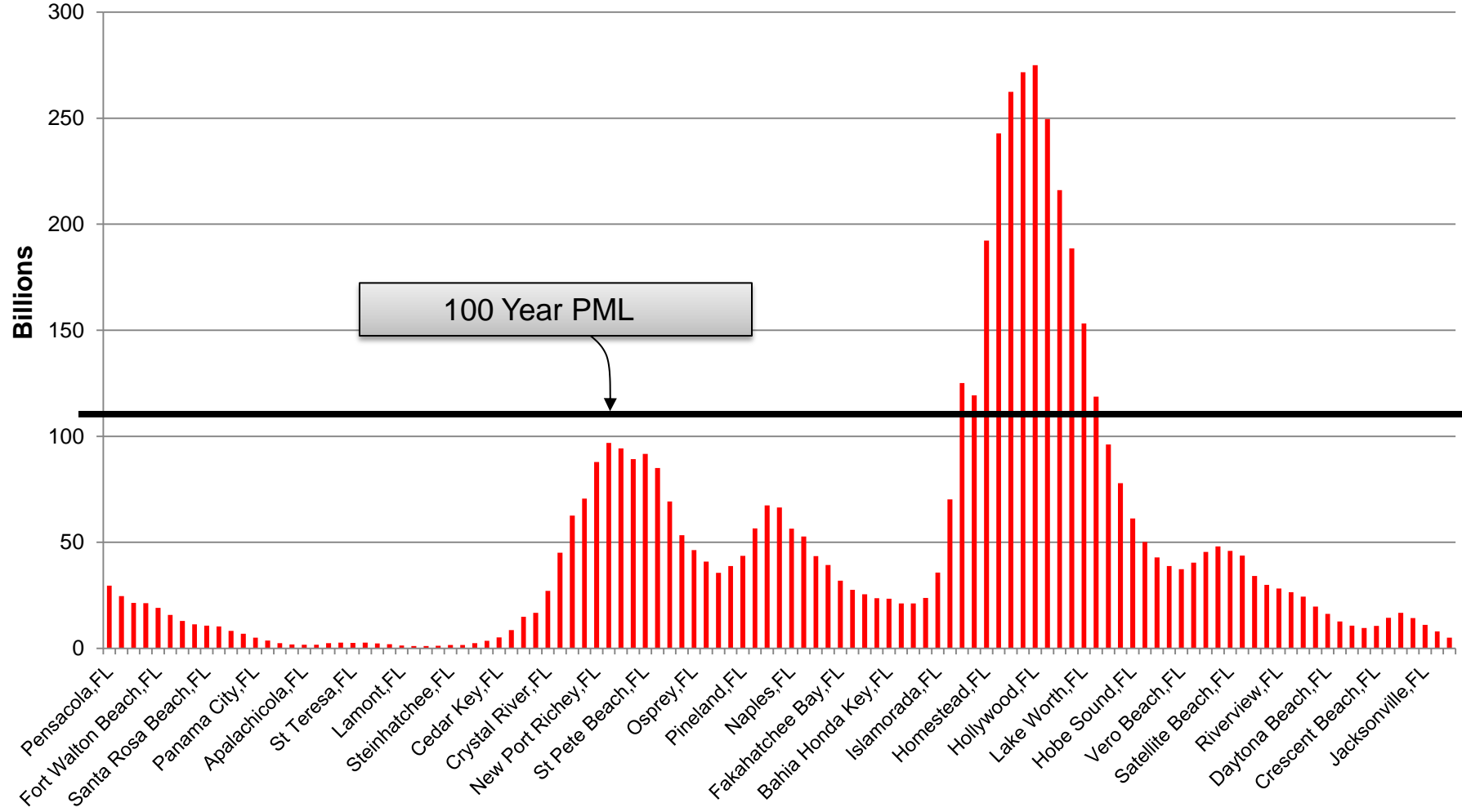
\$750,456,891.23

(From this model version!)

What You Get with RiskInsight® and CEs: Multiple Risk Metrics for Monitoring Formal and Informal Risk Tolerances



Focusing Solely on the PML (VaR) Can Mean Missing the Obvious—the \$150 Billion Florida Protection Gap



In Conclusion: Recent Innovations in Catastrophe Modeling Lead to Enhanced Insurer Relevance in Global Markets

- **Advanced open loss modeling platforms**
 - Full transparency
 - Better understanding of your large loss potential
 - Control over model assumptions
 - Higher confidence in risk management decisions
 - More efficient processes
 - Lower modeling costs
- **Additional risk metrics**—more intuitive and actionable information for decision making
- **Enhanced understanding and control lead to higher confidence in risk management decisions and ability to write more business in order to NARROW the protection gap**

Public Private Partnerships Economics of Climate Adaptation

Dr. David N. Bresch, Global Head Sustainability, Swiss Re

david_bresch@swissre.com



Reducing the disaster gap is an urgent priority

- What is the potential **natural catastrophe and climate-related loss** over the coming decade?
- How much of that loss can we **avert**? How?
- What investment will be required? Do the **benefits** outweigh the **costs**?
- What arrangements are needed for **rare but severe events**?

Climate-resilient development needs to **assess** and **address** total climate risk

Objectives

- **Facts and methods** for decision makers to design and execute a climate adaptation strategy
- **Information** to insurers and potential funders to unlock risk prevention funding and deepen global risk transfer markets

Methodology – Economics of Climate Adaptation (ECA)

1. Rigorous risk management approach to **assess** the sum of:
 - today's climate risk;
 - the economic development paths that might put greater population and value at risk; and
 - the additional risks presented by climate change.

} **Total climate risk**
2. Propose and prioritize a basket of adaptation measures to **address** total climate risk on an economic basis.

The working group studied more than 20 regions with diverse climate hazards

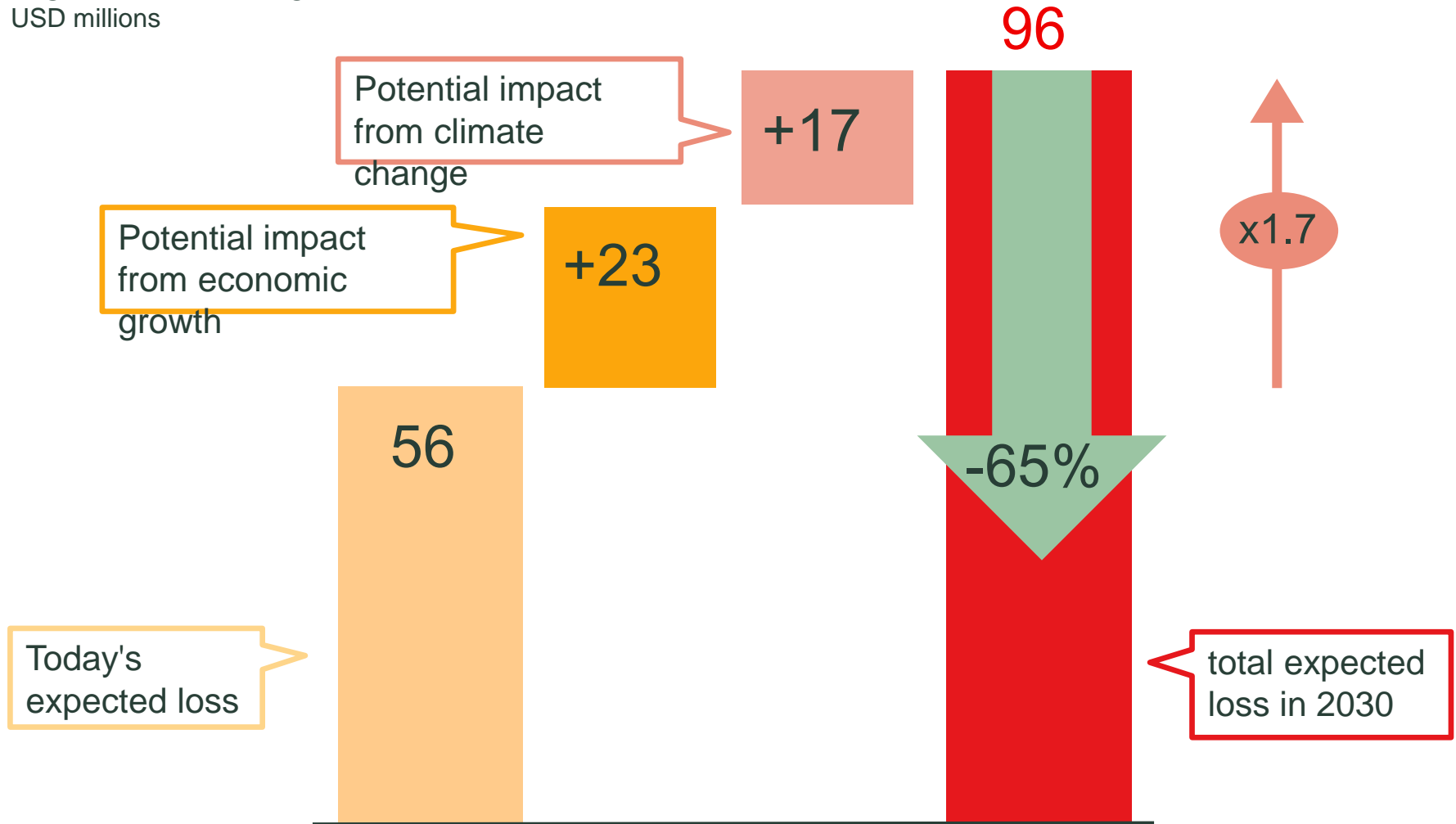


Total climate risk – city of Hull, UK, case study

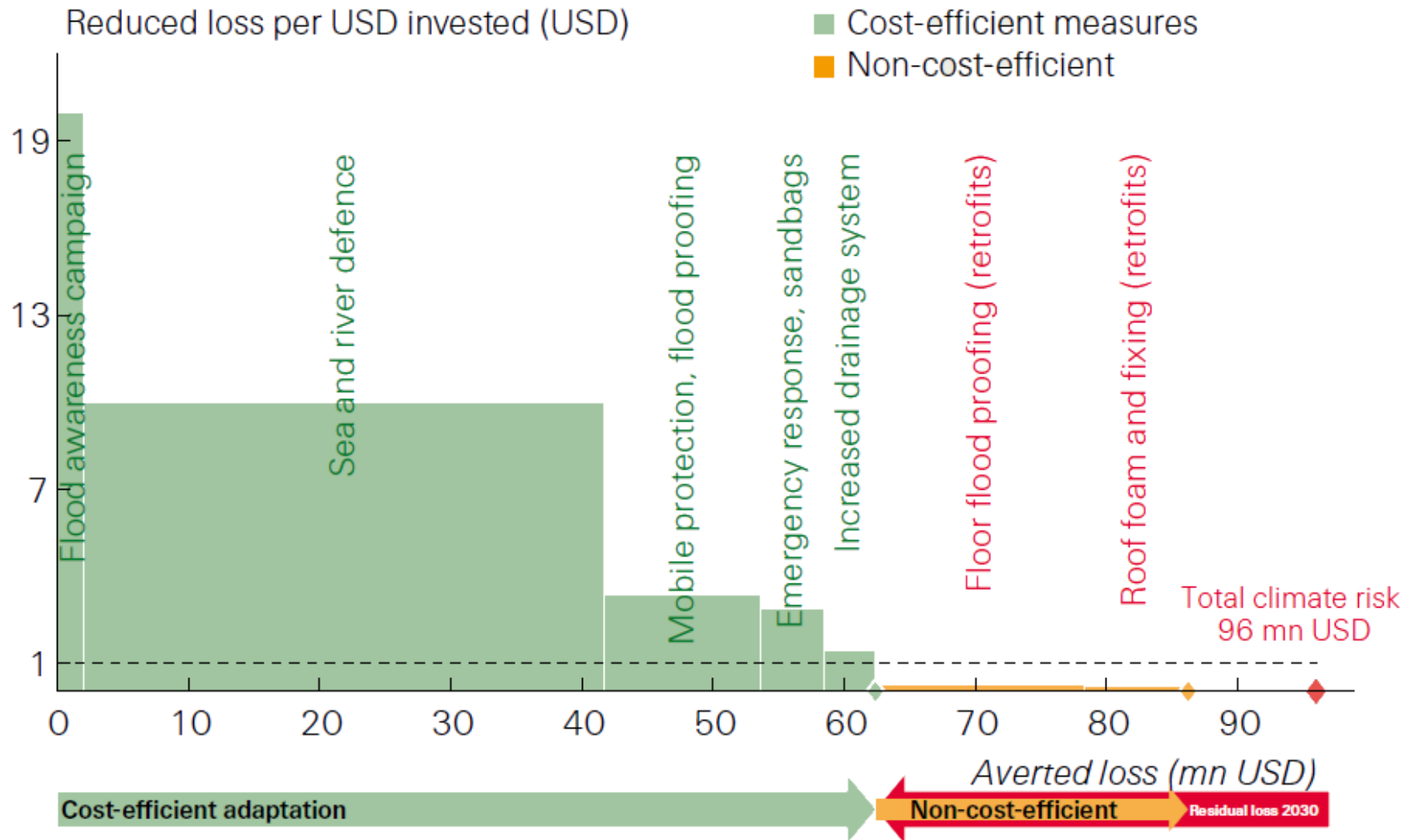
Annual expected loss from wind, coastal and surface flooding

High climate change scenario

USD millions

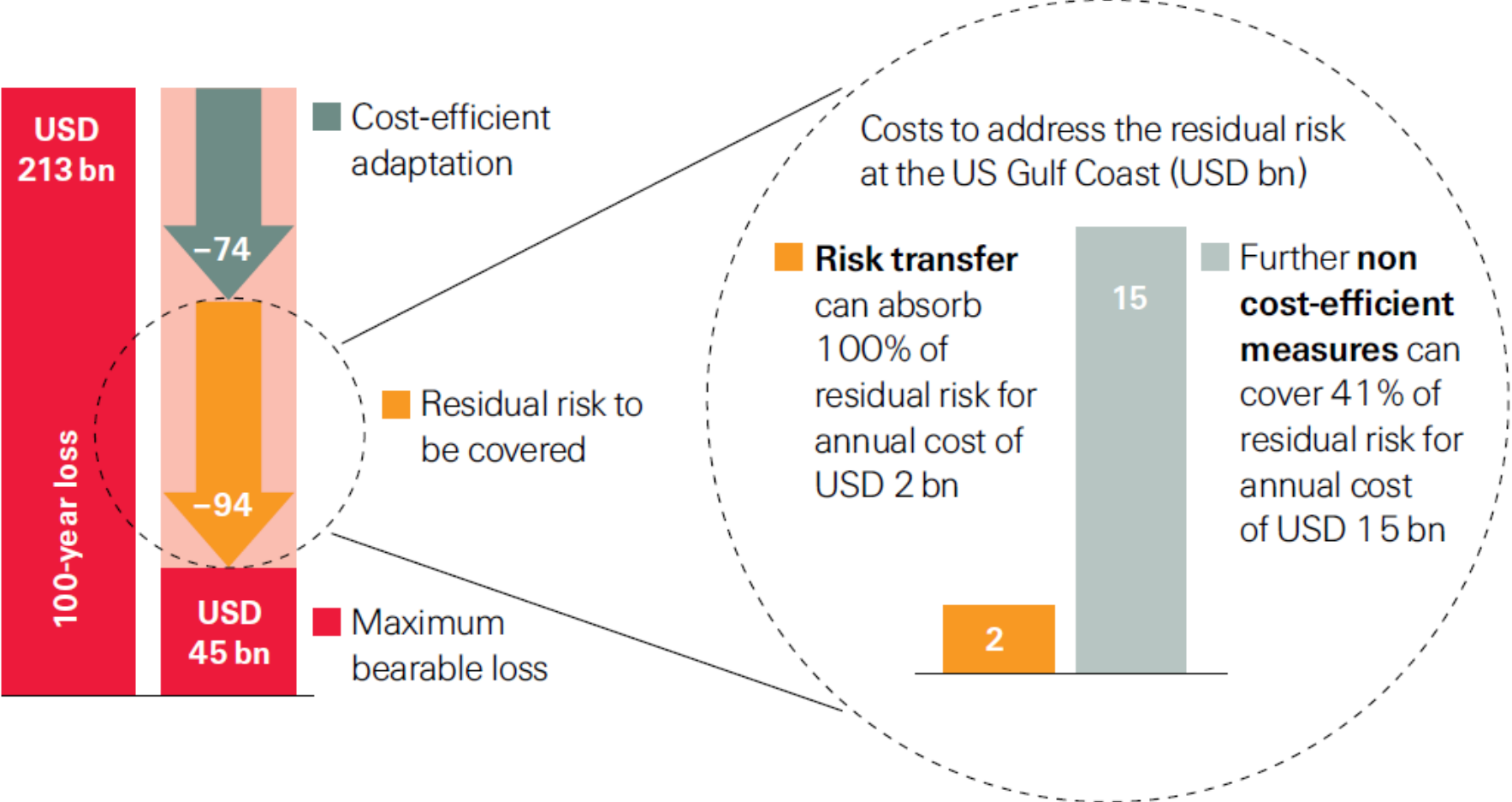


Adaptation cost curve – city of Hull, UK, case study



http://media.swissre.com/documents/Economics_of_Climate_Adaption_UK_Factsheet.pdf

Public Private Partnerships in risk transfer – US Gulf, risk to the energy system



Source: Swiss Re, ECA Group, Building a Resilient Energy Gulf Coast

www.swissre.com/rethinking/Building_a_resilient_Energy_Gulf_Coast.html
http://media.swissre.com/documents/Entergy_study_exec_report_20101014.pdf

Public Private Partnerships to shape climate-resilient development – Conclusions

- The custodians of economies need to prioritize adaptation measures to make societies more resilient to the impacts of climate change.
- The Economics of Climate Adaptation (ECA) methodology provides decision makers with the facts to systematically identify cost effective investments.
- The ECA allows decision-makers to integrate adaptation with economic development and sustainable growth.
- The insurance industry's experience in risk management and modelling and in developing insurance solutions makes it an important partner in future adaptation plans.

http://media.swissre.com/documents/Economics_of_Climate_Adaptation_focus_infrastructure.pdf

http://media.swissre.com/documents/pub_closing_the_financial_gap_W1.pdf



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