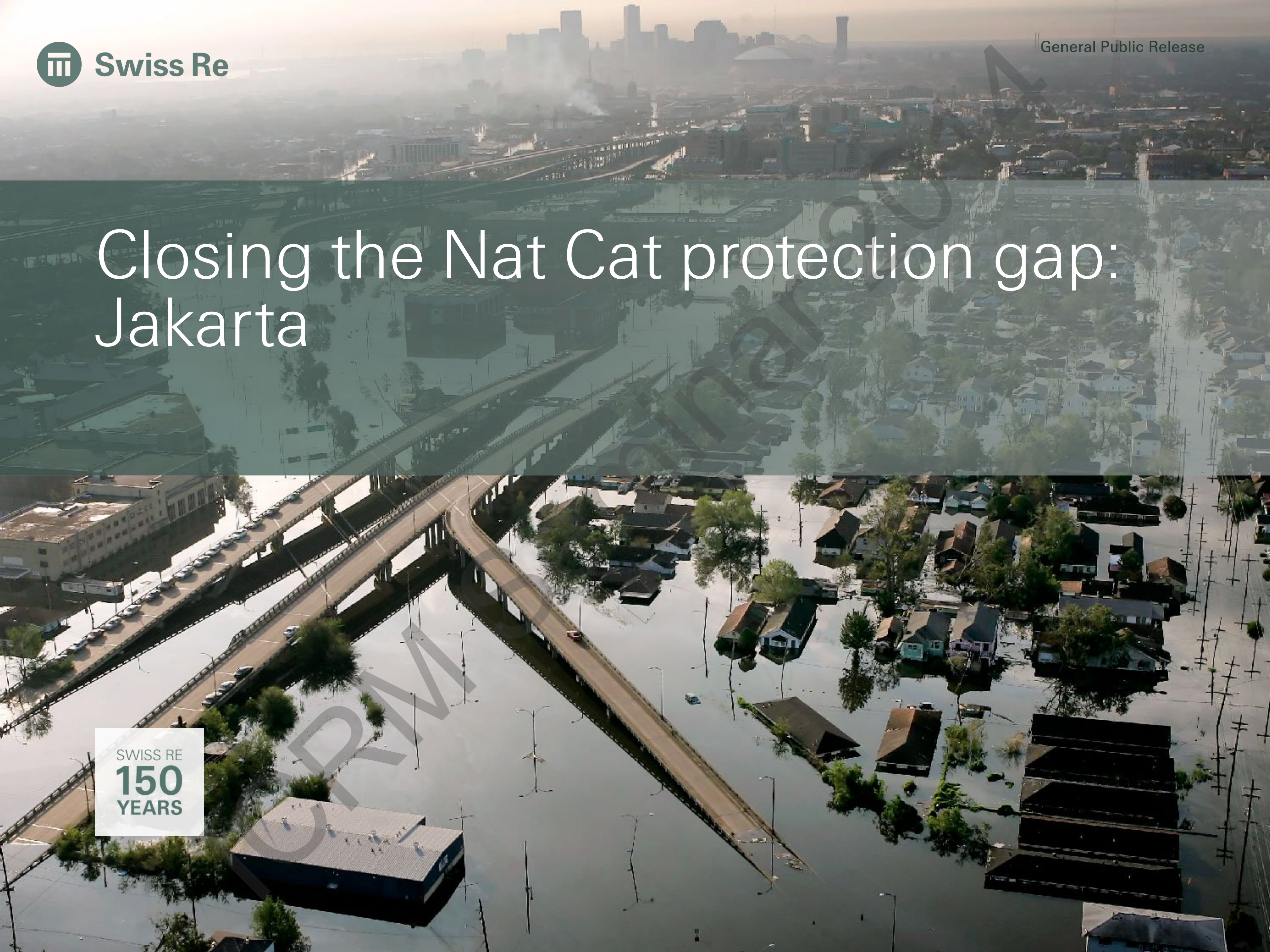

Closing the Nat Cat protection gap: Jakarta

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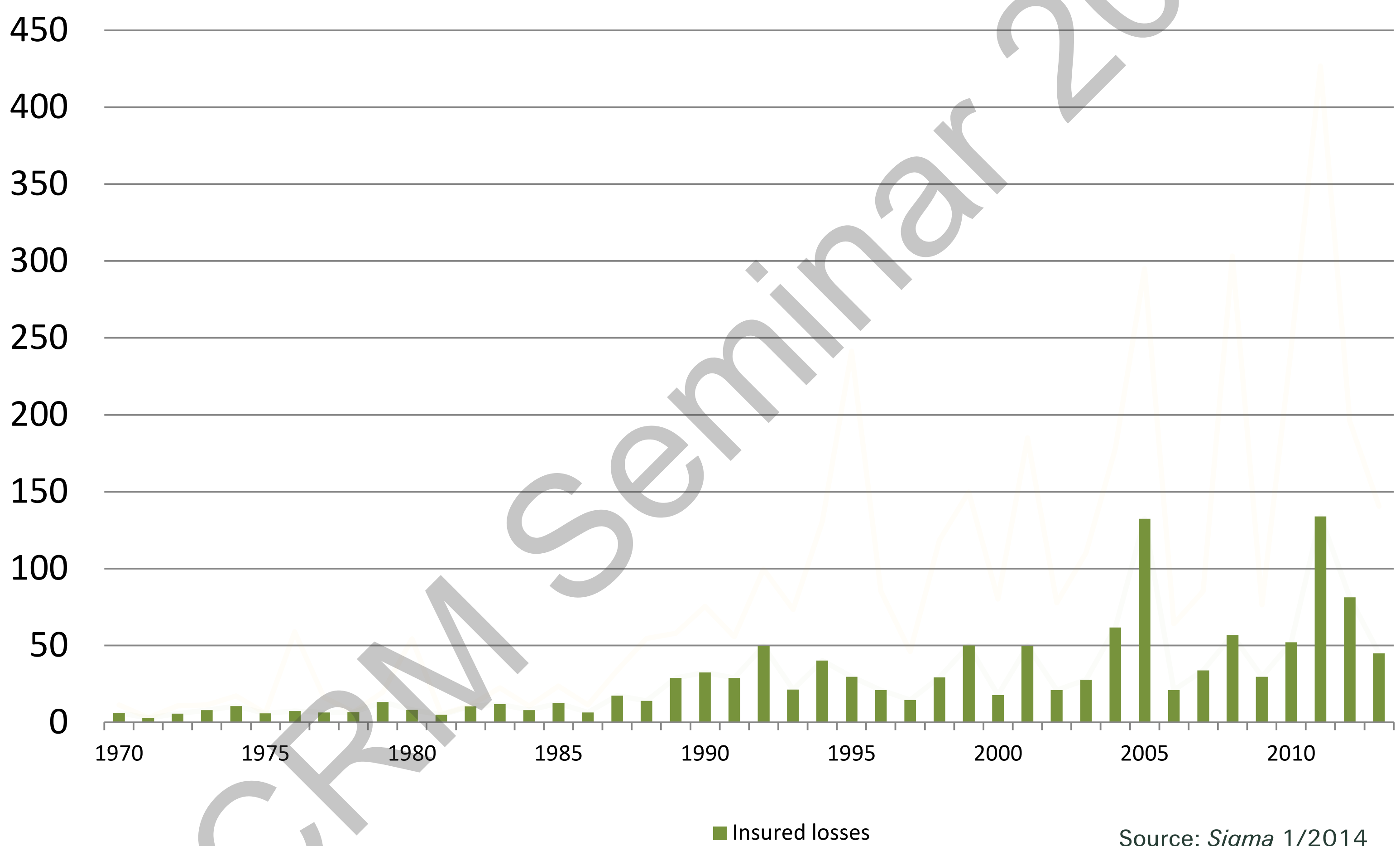
YEARS

Agenda

- **What is Nat Cat protection gap?**
- Nat Cat risk to Jakarta
- Estimation of insured and insurable portfolio
- Assumptions for Nat Cat modeling
- Nat Cat protection gap: Jakarta

Insured vs economic losses, 1970-2013 (in USD bn)



Source: *Sigma* 1/2014

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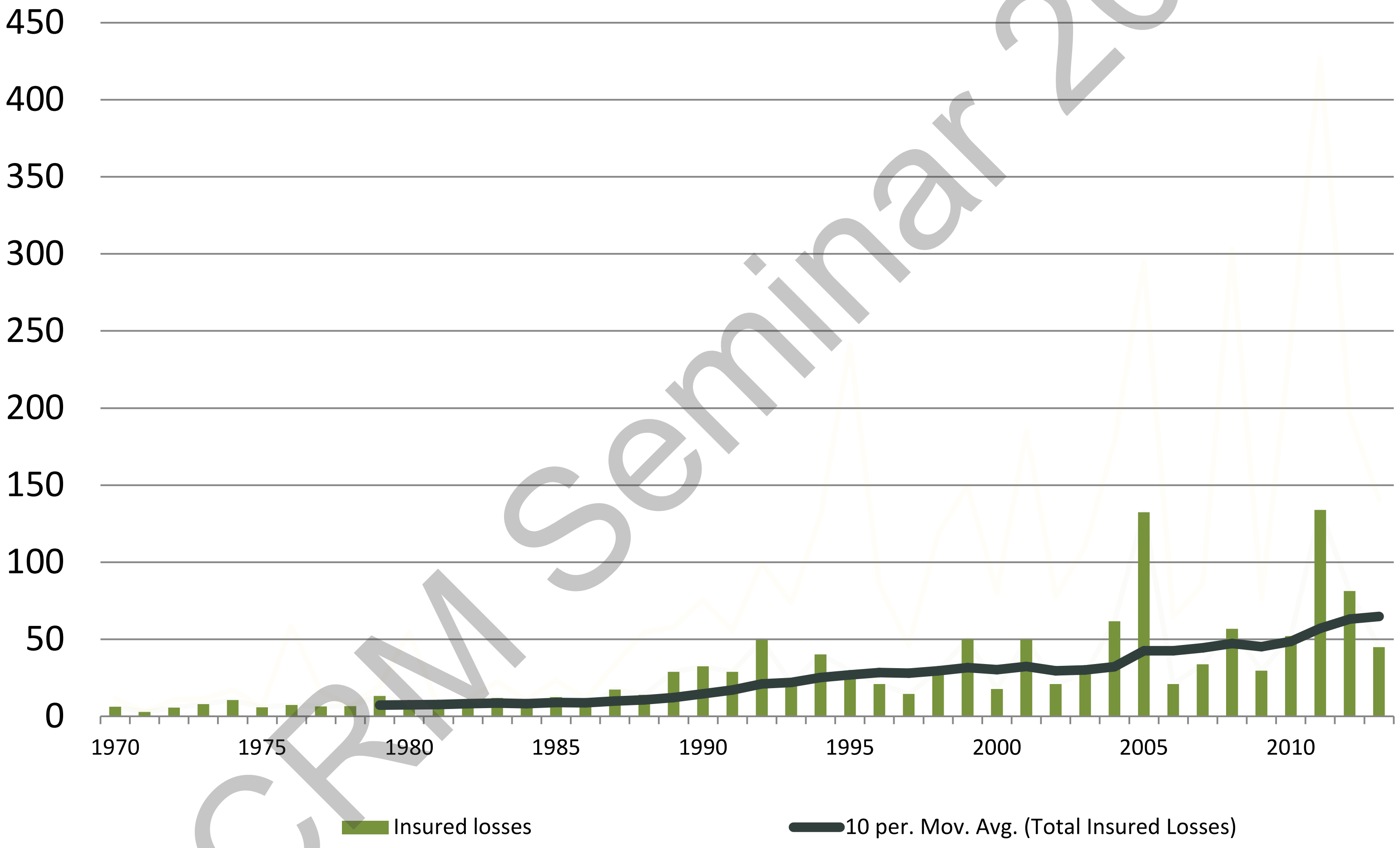

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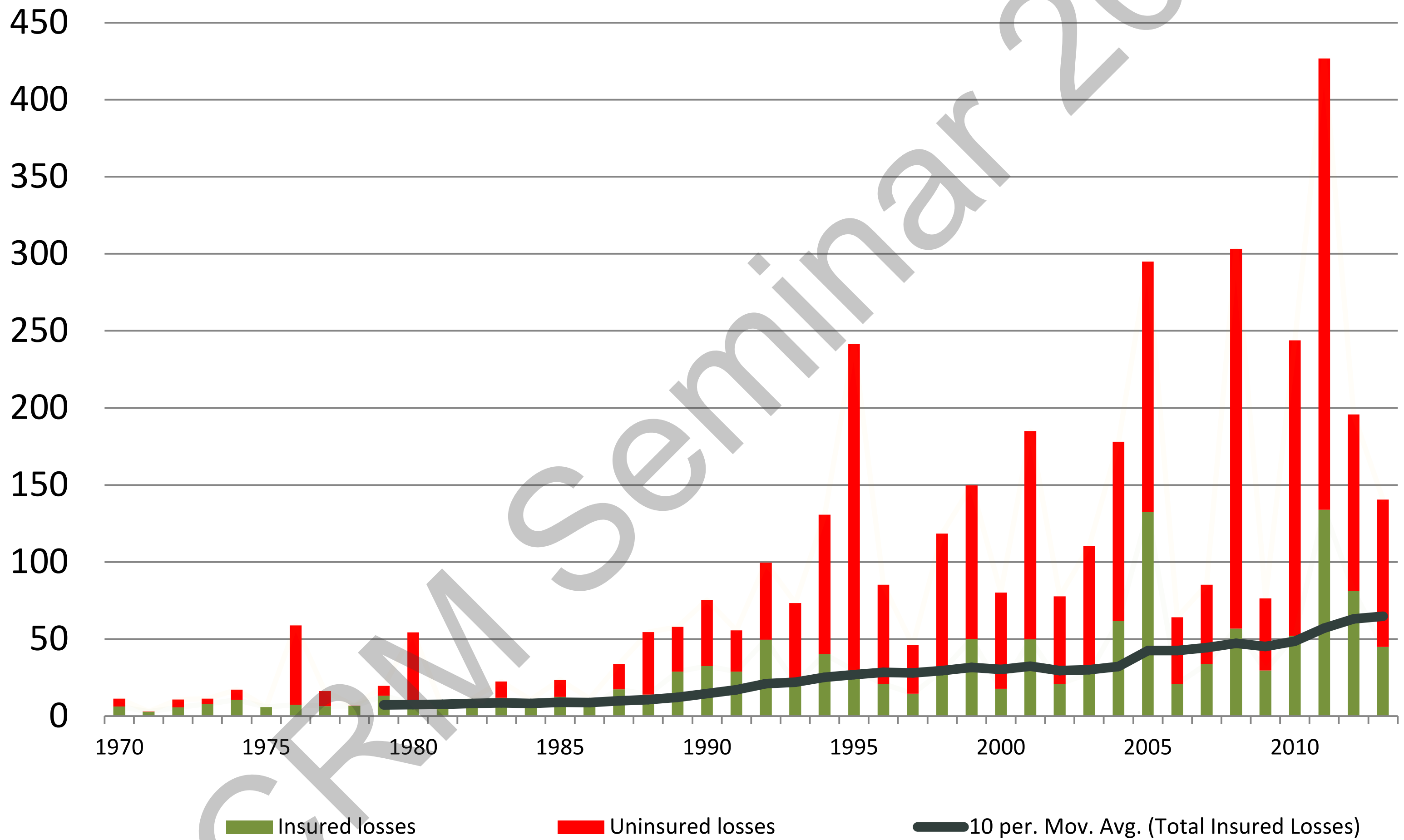

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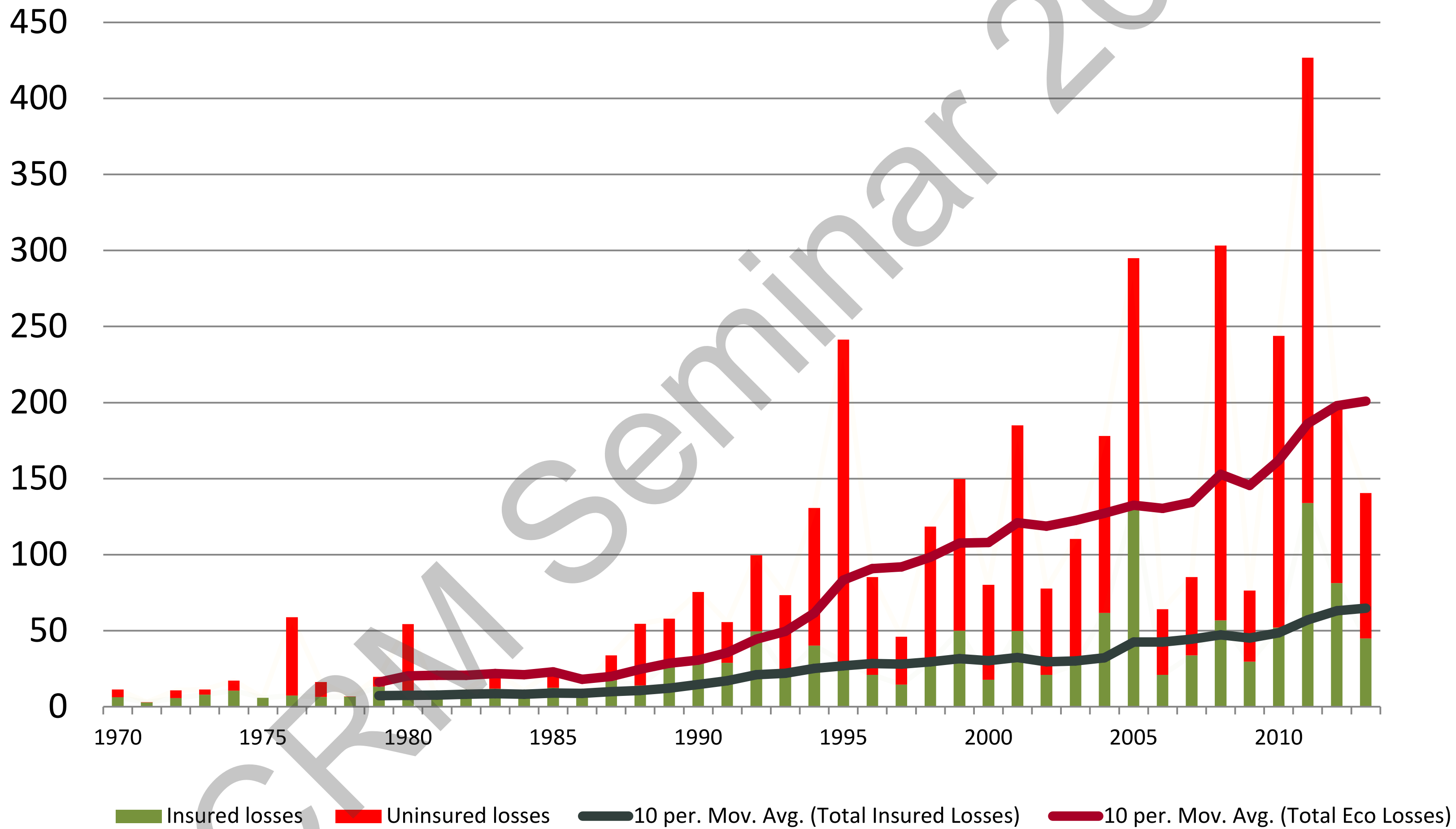
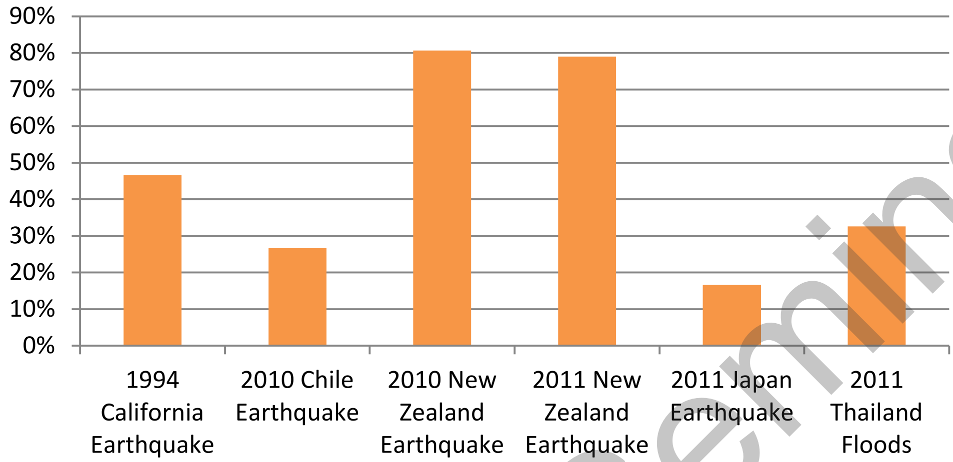


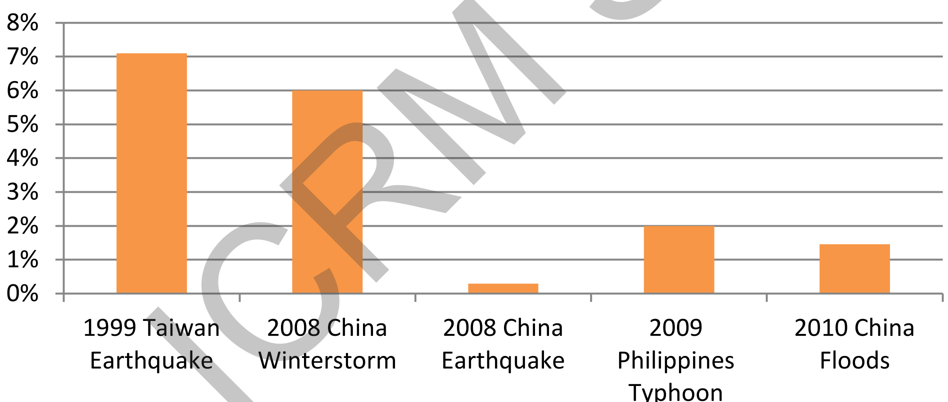
Source: *Sigma* 1/2014

Nat Cat protection gap:
Insured vs. economic losses

Nat Cat events in the world



Nat Cat events in developing Asia



Ratio of insured to economic loss:

very low for Asian countries

Source: *Sigma* 1/2014

Losses from natural catastrophes in 2013 worldwide (in USD bn)

Region	Victims	% of total	Insured Losses	% of total	Economic Losses	% of total
North America	249	1.0%	19	42.0%	32	22.7%
Latin America	1,055	4.1%	2	5.4%	9	6.3%
Europe	1,167	4.5%	15	33.8%	33	23.4%
Africa	1,751	6.8%	1	1.4%	1	0.7%
Asia	20,653	79.7%	6	12.5%	62	44.1%
Oceania/Australia	21	0.1%	1	2.9%	3	2.0%
Seas/Space	1,007	3.9%	1	2.2%	1	0.8%
World	**25,903**	**100%**	**45**	**100%**	**140**	**100%**

Source: *Sigma* 1/2014

- Floods in Europe and Canada, several tornadoes in the US caused the insured losses to be highest in North America and Europe
- Typhoon Haiyan and other major storms caused the human and economic losses to be highest in Asia

Key message:

Asia's contribution to global losses is increasing

What's your view on "protection gap"?

What is your organization doing about it?

Agenda

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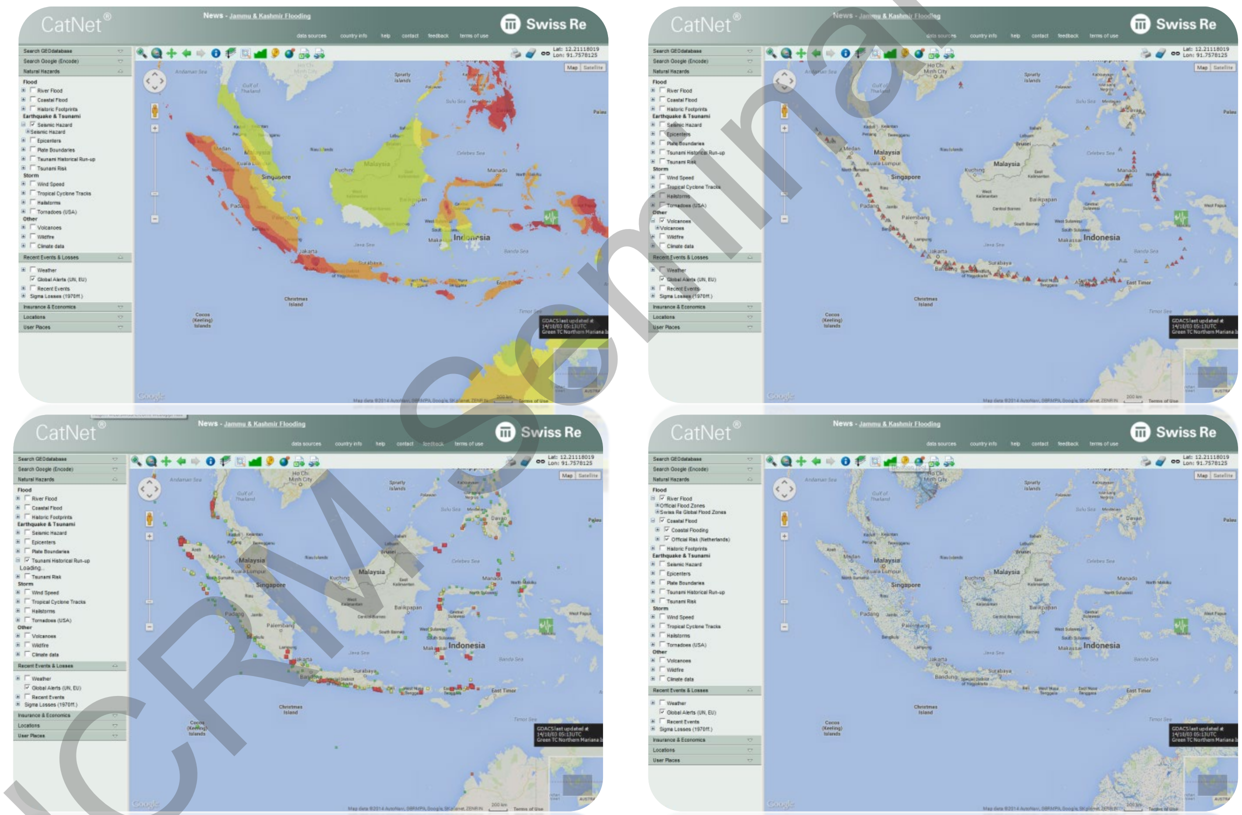
Jakarta snapshot

- **Jakarta is a major economic driver** of Indonesia, accounting for 16.3% of the national GDP.
- It is experiencing very **rapid urbanisation and population growth.**
- The city is located in an area **exposed to various natural hazards.**



Jakarta's Nat Cat history

Natural hazard	Causes	Damage history	Loss potential
Flooding	Torrential rain, sea level rise, high tide, land subsidence	Experienced many damaging events in recent past	Very high
Earthquake	Existence of subduction zone and fault lines	Earthquakes were felt in recent past; no damage causing event	High
Volcanoes	Existence of active/dormant volcanoes in adjacent provinces	No damage causing event	Moderate
Extreme temperature	Rapid urbanization and changing climate	No damage causing incident	Low

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Scope:

"Nat Cat protection gap is the *difference between* the *insured property* assets and *potentially insurable property* assets and the corresponding difference in loss levels (100/250 return period loss) from a given Nat Cat event such as earthquake and flood. Insurable property assets would be defined as all physical assets (buildings, contents, infrastructure, and vehicles) which could potentially be covered by insurance policies. Any *BI/CBI* losses as well as loss/damage to people would be excluded* in this study. Therefore the insurable loss cannot be really compared to economic losses, but may come close."

*BI stands for business interruption
*CBI stands for contingent business interruption

Earthquake Insured portfolio:

- Earthquake is an add-on cover to general fire policy or part of property all risk (PAR) or industrial all risk (IAR) policy.
- Earthquake market is tariff based with rates provided by Maipark.

Exposure data
- Gross exposures were available
- Estimated when only retained portfolios available

Earthquake Penetration
- Estimation of average EQ rate
- Estimation of participation of each client in the market

Market insured portfolio
- Estimated EQ market value was then benchmarked
- 2023 market size estimated using property premium growth projections

Flood Insured portfolio:

- Flood cover is generally provided with standard fire policy.
- Flood market is tariff based with rates provided by the regulator.

Exposure data
- Gross exposures were available
- Estimated when only retained portfolios available

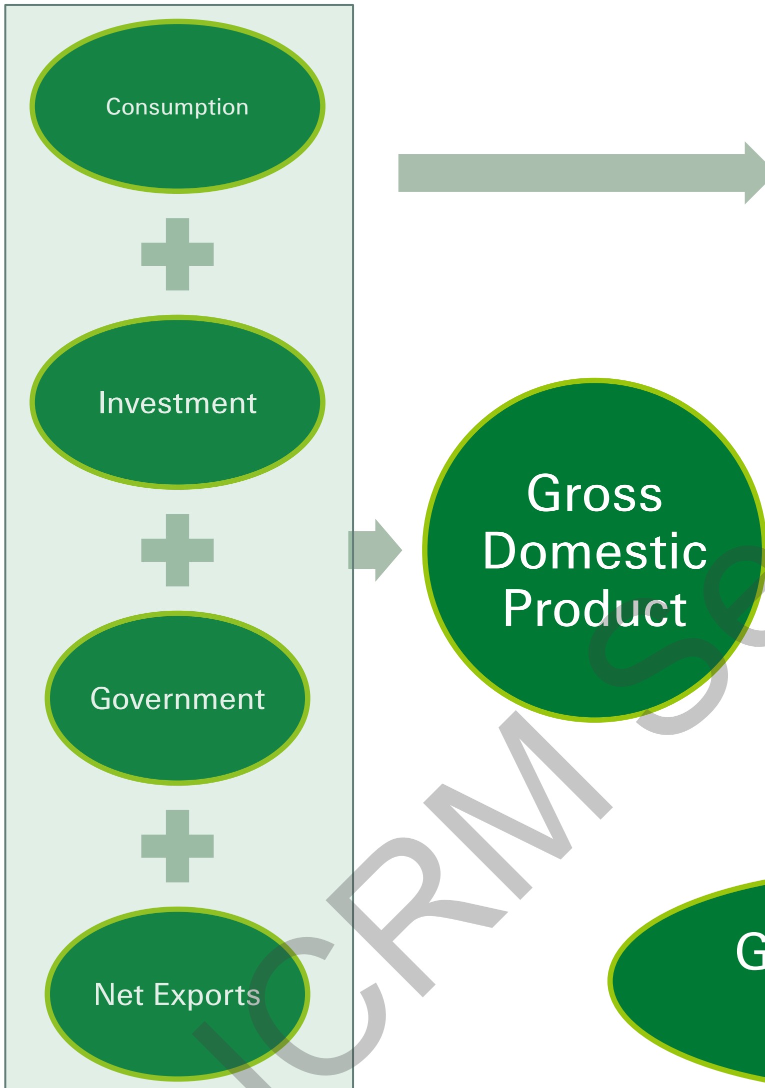
Flood Penetration
- Calibration of flood penetration by various sources
- Estimation of participation of each client in the market

Market insured portfolio
- Estimated FL market value was then benchmarked
- 2023 market size estimated using property premium growth rate projections

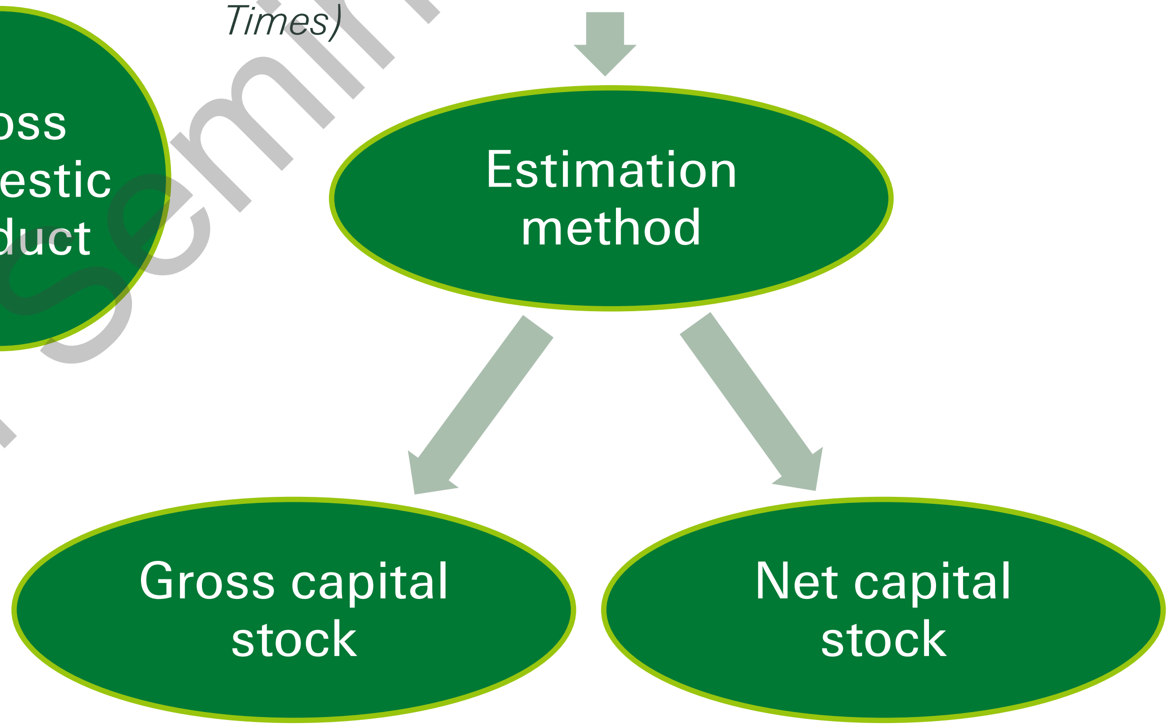
Insurable portfolio:

- Initially, available information on number of households, trends in construction industry, real estate trends and other sources were examined. Then, *"Capital Stock"* concept from the field of economics was used.
- OECD (Organization for Economic Co-operation and Development) defines it as follows:-
  - *"In the gross capital stock, assets are valued at their "as new" prices regardless of their actual age and condition. In the net capital stock, assets are valued at their market prices. These are lower than their "as new" prices by the amount of accumulated consumption of fixed capital."*
- Gross capital stock is widely used as a broad indicator of the productive capacity of a country. Following methods are available:
  - Perpetual Inventory Method
  - Direct Survey Method
  - Balance of Fixed Assets

Insurable portfolio:



Gross fixed capital formation (GFCF) refers to the net increase in physical assets (investment minus disposals) within the measurement period. It does not account for the consumption (depreciation) of fixed capital, and also does not include land purchases. It is a component of expenditure approach to calculating GDP *(Source: Financial Times)*



Insurable portfolio:

- Gross fixed capital stock estimates were used as initial input.
- GDP growth assumptions were used to project the exposures for desired period.
- Jakarta's contribution to this was estimated based on GDP contribution over the years.
- Consumer price index movements are also taken into consideration.
- Ratio of insured to insurable portfolio was computed and sense check was done.

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Assumptions

- Exposures and Modeling:
  - Flood TSI was considered in the analyses as reported by the client.
  - Average market split for occupancy and coverage was assumed.
  - Average EQ rate in the market was assumed.
  - Jakarta property premium growth assumed to be same as for Indonesia as whole.
  - Assumed that growth of capital stock would be same as GDP growth.
  - Assumed that future contribution of Jakarta to Indonesia GDP would increase.
  - In future, residential and commercial participation in insurance is assumed to increase. BI take up rate for commercial and industrial risks are assumed to increase.
  - Pragmatic approach was used to model flood. Flood protection measures are not taken into account as the study was interested in 100 and 250 year losses; at such levels most of the protection measures fail.

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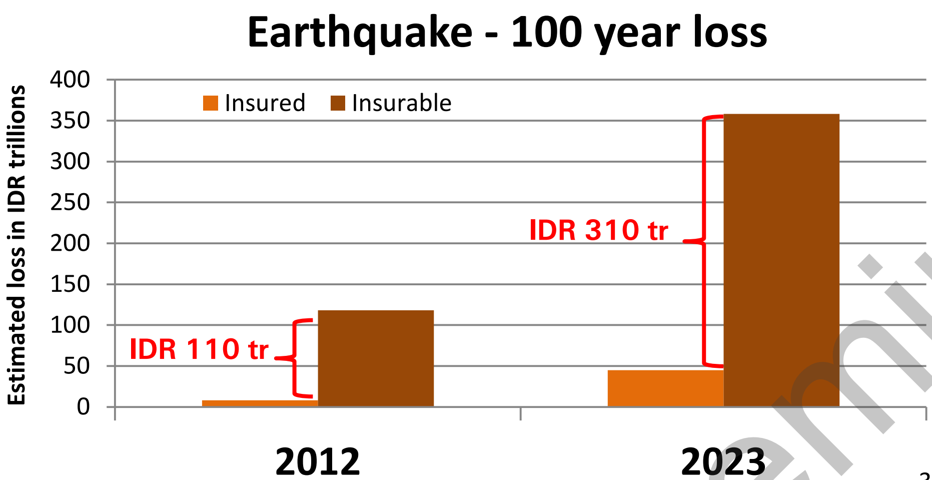
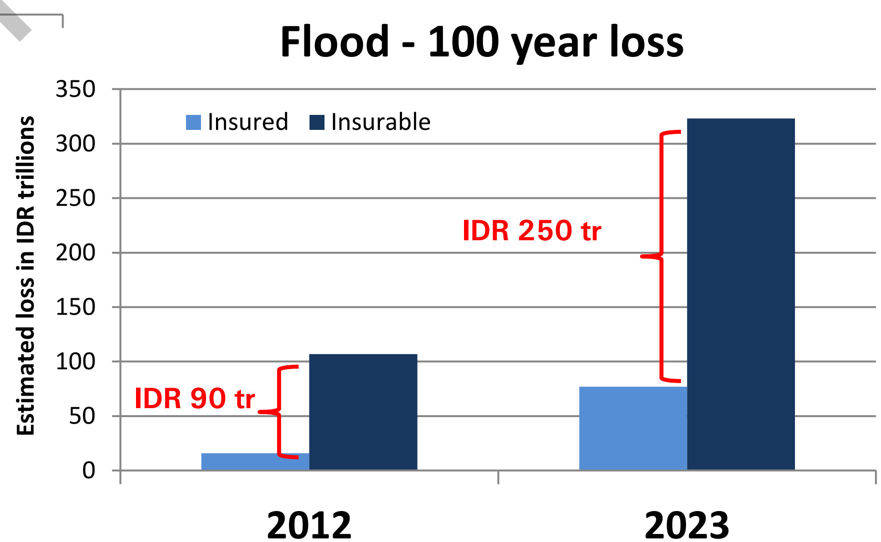
Nat Cat protection gap:
Jakarta in 2012 and 2023



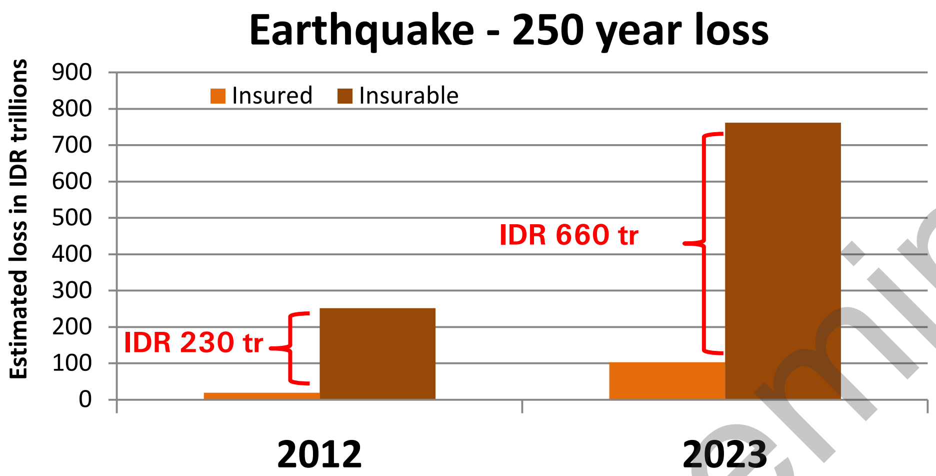
Significant insurance protection gap in case of a **1 in a 100 year** loss event

Opportunity to make insurance accessible and affordable to broader community through innovation



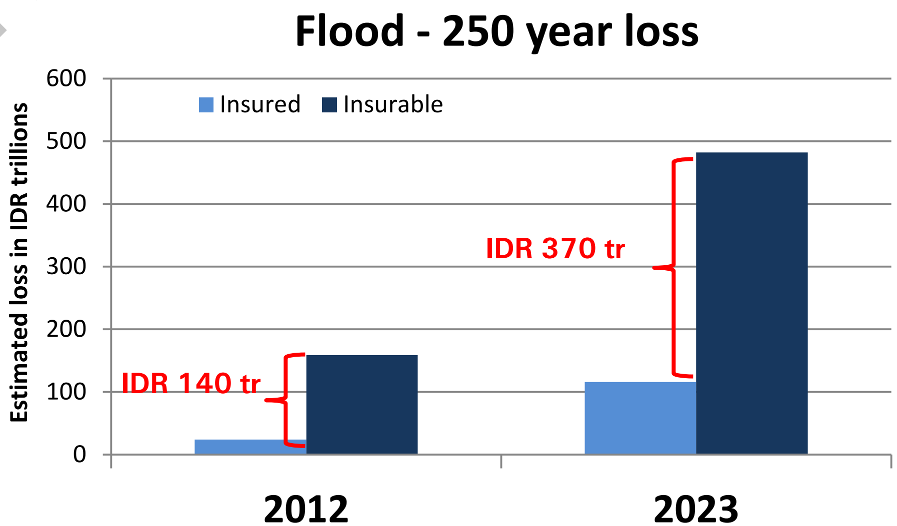
Disclaimer: All figures are estimates made by Swiss Re. Swiss Re doesn't take any responsibility for the use of these figures but encourages further analysis of same.

Nat Cat protection gap:
Jakarta in 2012 and 2023



Significant insurance protection gap in case of a **1 in a 250 year** event

Opportunity to make insurance accessible and affordable to broader community through innovation



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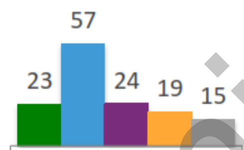
Risk perception survey: Jakarta*

The protection gap in Jakarta is high. So is the *perception* of natural catastrophe risks.

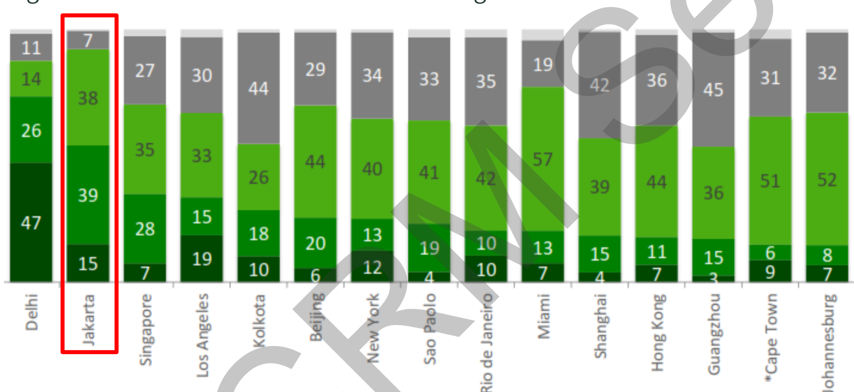
- In Jakarta, perceived risk of flood and strong earthquake/ tsunami is highest worldwide.
- 33% of Indonesians say the biggest threat to their country comes from natural catastrophes. Many are worried that things will get worse.

% of respondents, surveyed in Jakarta whose neighbourhood was hit by a natural catastrophe



- A powerful storm
- A major flood
- A strong earthquake/tsunami
- A major draught
- Another natural catastrophe (i.e. major wildfire)

The extent of the damage caused by the most serious natural catastrophe is the 3rd highest worldwide for substantial damage and highest worldwide for moderate damage



- DK/ NA
- No damage at all
- Minor damage; some repairs were needed
- Moderate damage; a part of your home was not habitable
- Substantial damage; you had to relocate temporarily or permanently

* The "Risk perception survey" was conducted as part of the 150 -year anniversary, surveying 19 countries and 15 cities in 4 regions. The results are not based on hard data, but on ***perceptions of risk*** of the surveyed sample. Survey samples varied between 1'013 – 2'186 for countries, and 250 – 335 for cities. For more results: http://150.swissre.com/dialogue/riskwindow

How to close this Nat Cat protection gap

1. Improve risk mitigation measures such as flood defences, evacuation and rescue procedures, early warning systems

2. Upgrade building codes and land-use plans based on hazard level (seismicity, soil quality, flood zones) to reduce exposure in high risk areas

3. Educate people, businessmen and public authorities to understand the concept and the value of insurance.

4. Making insurance accessible and affordable to a larger part of the population, businesses, municipalities, provincial and federal gov't.

5. Innovation in terms of risk transfer solutions (new products)

6. Improve the quality of information about physical assets: location, construction standard, occupancy, replacement value, etc.

Key message:

Pro-active support needed by - government/industry/ academia to close this protection gap

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