Climate Change Risk Management from a (Re-)Insurance Perspective

Ernst Rauch
Global Head Climate & Public Sector Business Development
Chief Climate and Geo Scientist

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Role of the (re-)insurance industry in the natural catastrophe and climate change and resilience context

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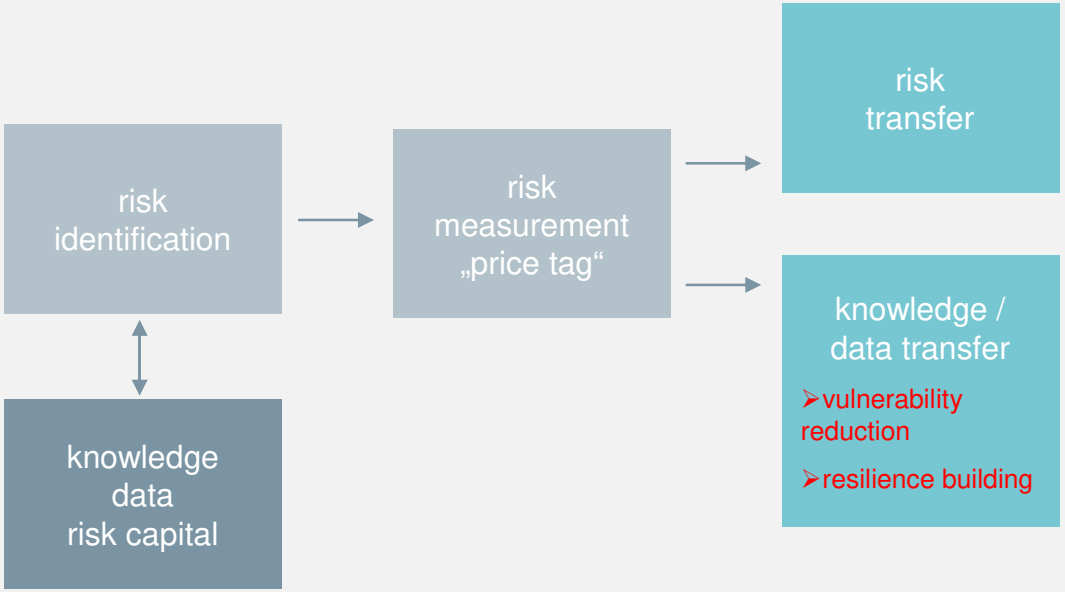
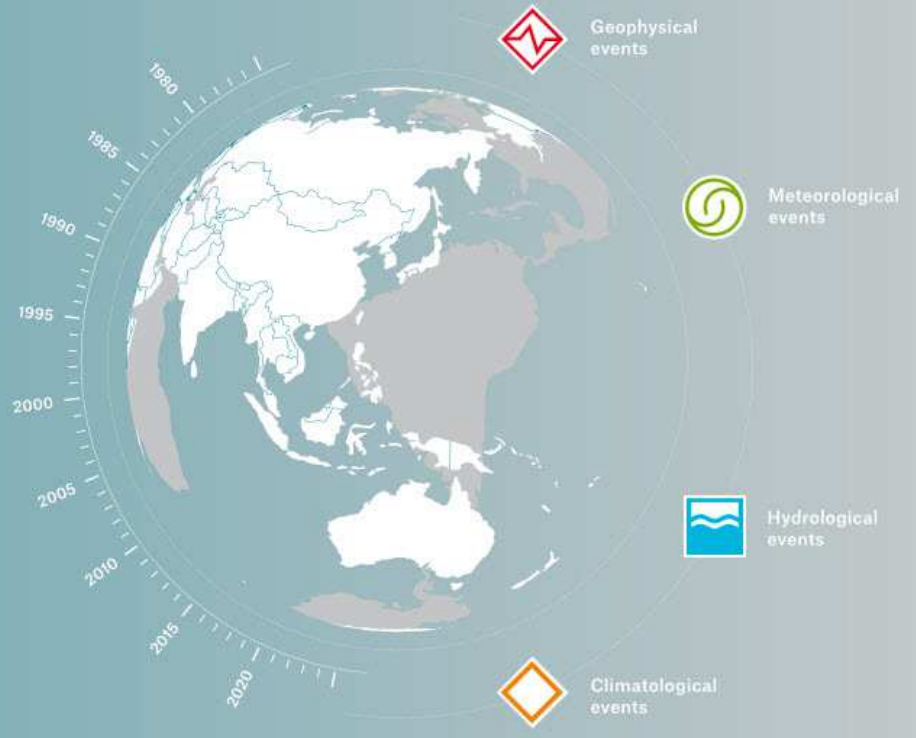
Munich Re facts

- Founded 1880 in Munich
- Gross premiums written (2017): € 49.1bn
- Consolidated result (2017): € 392m
- Staff Munich Re Group (2017): 42,410 (thereof 28.6% in Reinsurance)
- Website: www.munichre.com

(Re-)Insurance



Source: Munich Re


1980
1985
1990
1995
2000
2005
2010
2015
2020
Geophysical events
Meteorological events
Hydrological events
Climatological events

Relevant loss events from natural hazards worldwide 1980 – 2017

Increasing frequency of weather related events

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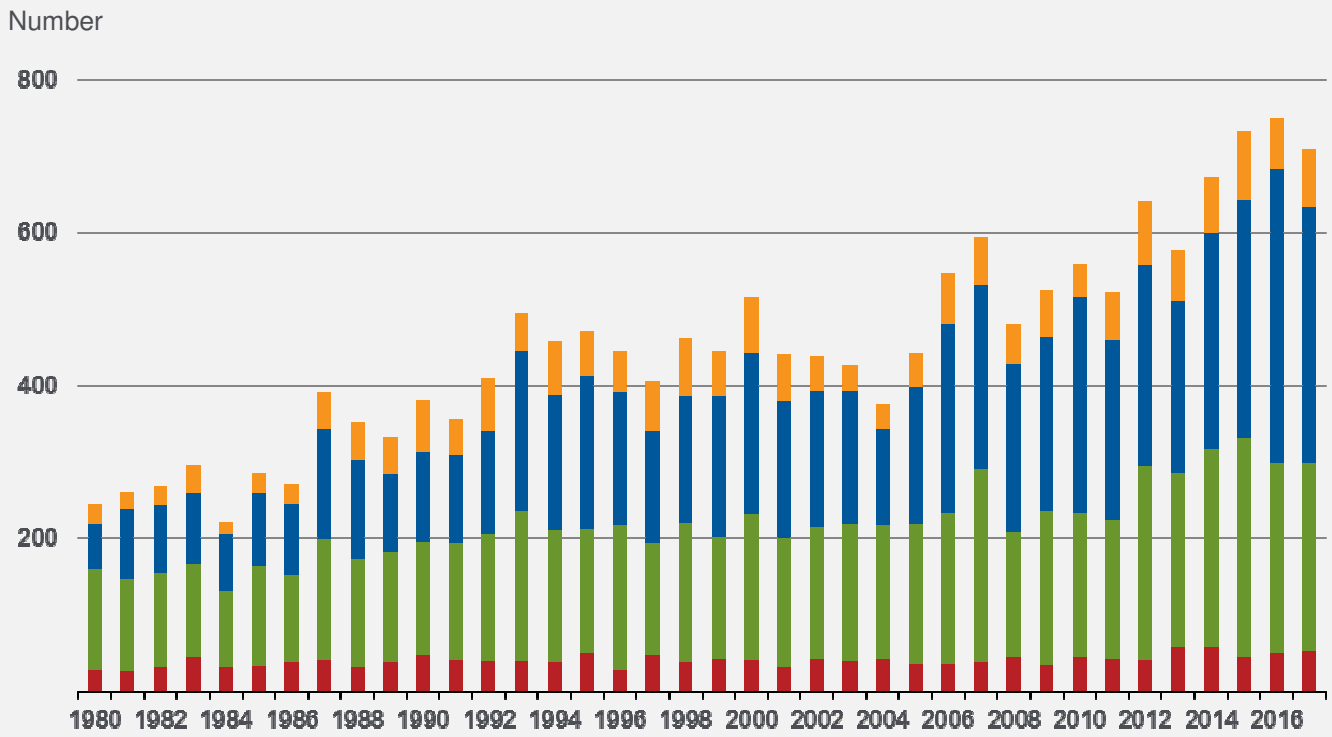

Geophysical events
(Earthquake, tsunami, volcanic activity)

Meteorological events
(Tropical storm, extratropical storm, convective storm, local storm)

Hydrological events
(Flood, mass movement)

Climatological events
(Extreme temperature, drought, forest fire)

Accounted events have caused at least one fatality and/or produced normalized losses ≥ US$ 100k, 300k, 1m, or 3m (depending on the assigned World Bank income group of the affected country).

Relevant loss events from natural hazards worldwide 1980 – 2017

Increasing economic losses (after inflation adjustment)

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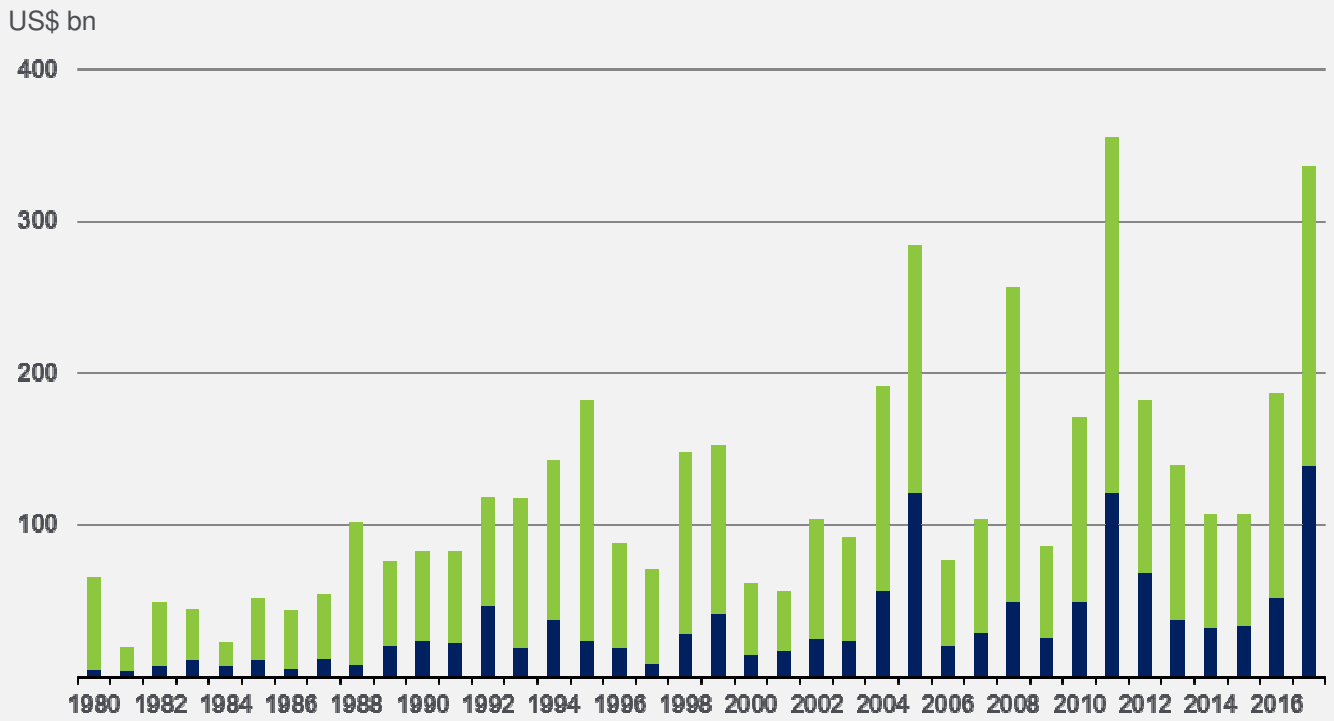


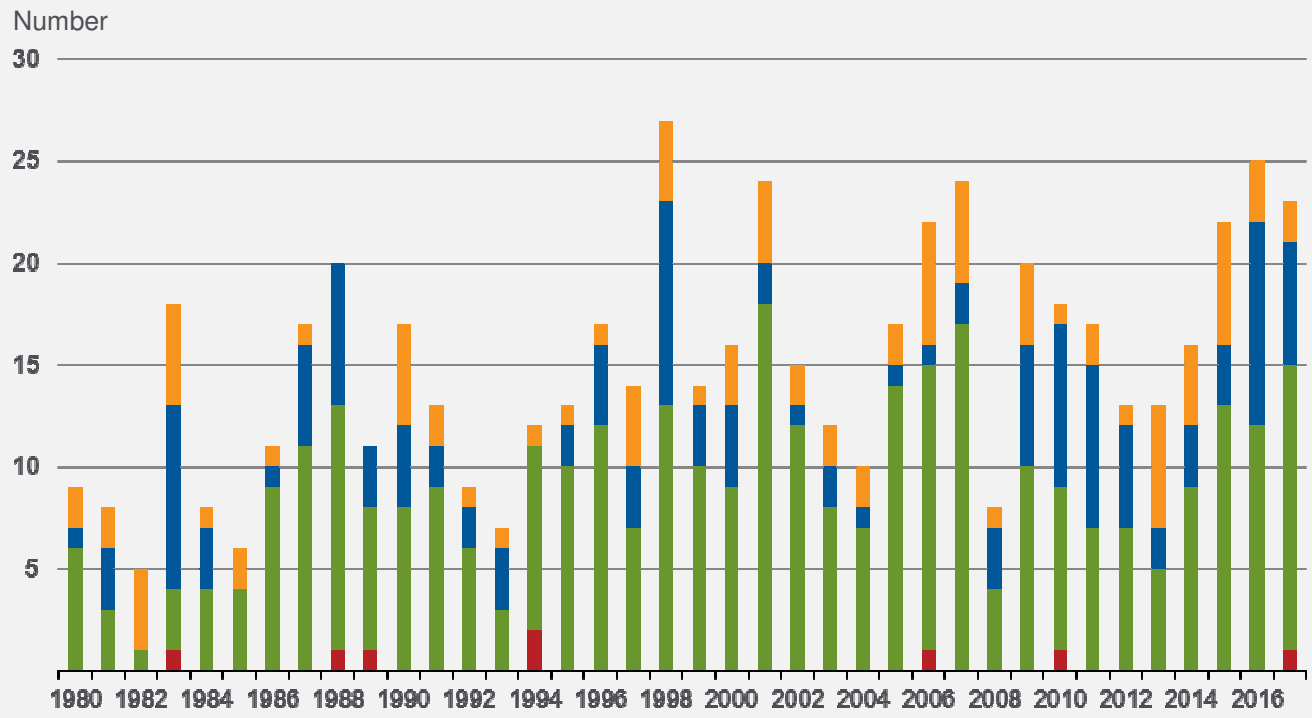
Overall losses (in 2017 values)

Insured losses (in 2017 values)

Inflation adjusted via country-specific consumer price index and consideration of exchange rate fluctuations between local currency and US$.

Relevant loss events from natural hazards in Australia 1980 – 2017

Weather-related events are dominating



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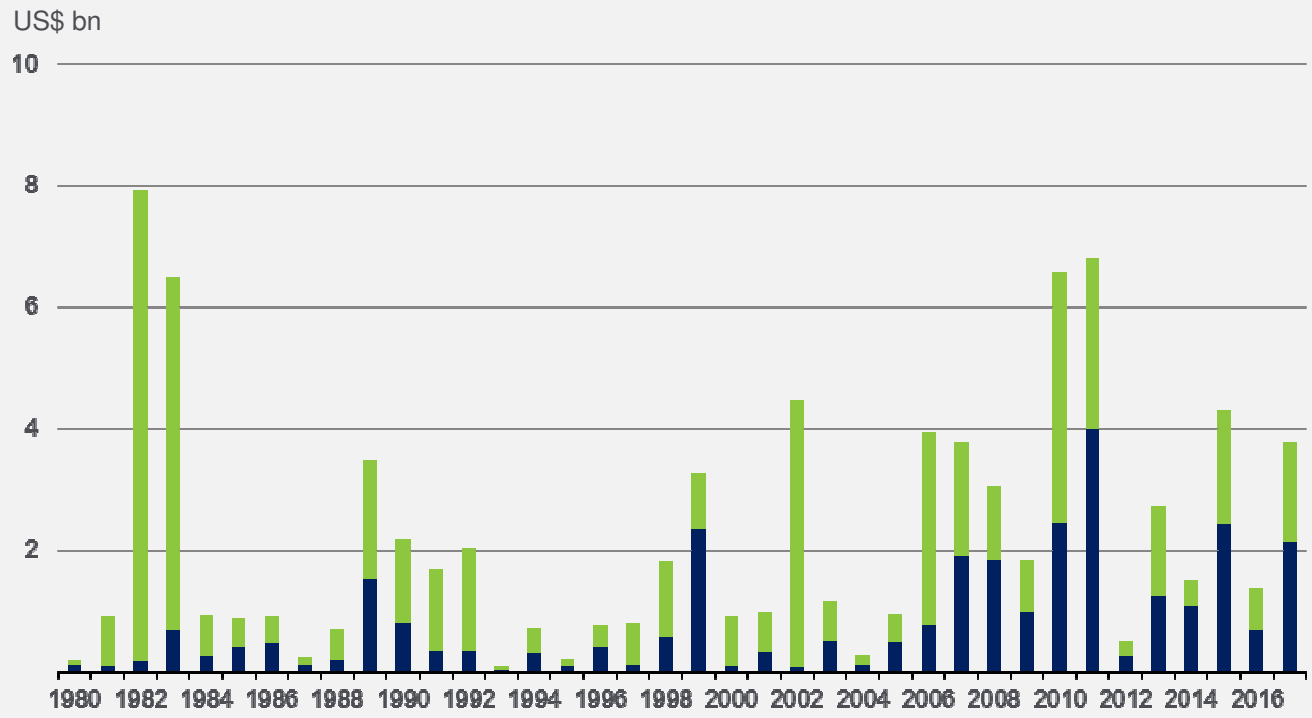
Relevant loss events from natural hazards in Australia 1980 – 2017

Increasing insured losses (after inflation adjustment)



Overall losses (in 2017 values)

Insured losses (in 2017 values)

Inflation adjusted via country-specific consumer price index and consideration of exchange rate fluctuations between local currency and US$.

Natural catastrophe loss events in Australia 1980 – 2017
Percentage distribution by peril

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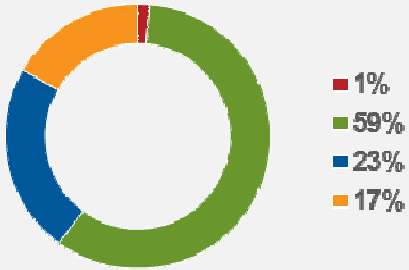
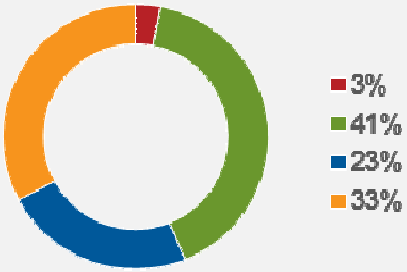
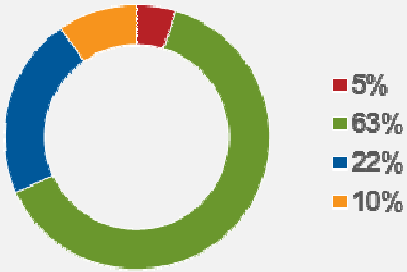
Number of relevant events: 570



Overall losses: US$ 85bn



Insured losses: US$ 31bn



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Drivers for globally increasing losses from natural hazards

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Global increase in population	From 4 billion (1975) to 7.6 billion (2018)	**Not necessarily problematic** for insurers (premiums grow proportionally with risk)
Improved standard of living	Middle class is growing rapidly worldwide	
Concentration of people / assets in urban areas	Share of urban population is increasing continually: 37% (1975) - 50% (2010) - 57% (2025)	
Settlement and industrialization of vulnerable areas	Especially coastal areas, areas close to rivers	**Problematic** for insurers, if risk models are not adjusted accordingly
Increase of complexity and interdependencies	Increasing complexity of value chains (i.e. production cycles) in industrial facilities	
Climate Change	Intensification and accumulation of extreme weather events in certain areas	

The NatCat Insurance Gap by income group:
still a serious issue not only in low-income countries

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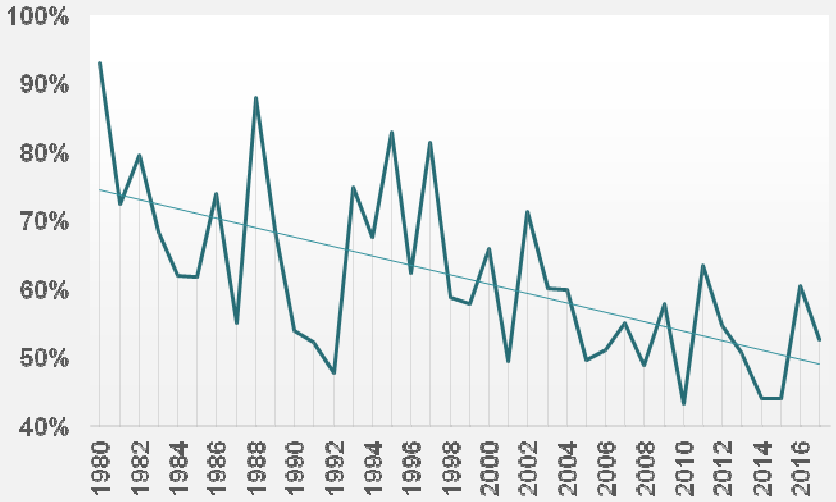
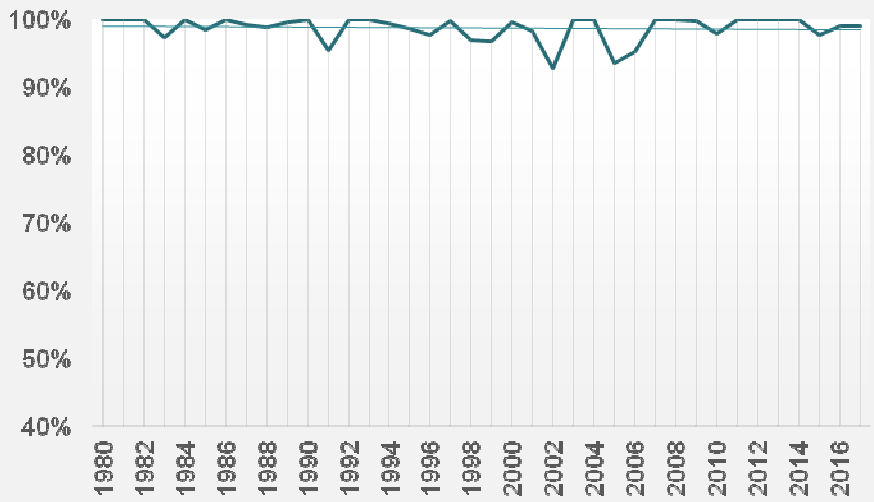
Insurance gap in high- (left) and low-income* (right) countries 1980-2017 based on MR NatCatSERVICE





Since 1980 the insurance gap (uninsured losses as a share of overall losses) has significantly decreased in high-income countries (below 60%), while in low-income countries it is still >95%.

Source: Munich Re (2018) *Income classification defined by World Bank: high-income countries GNI ≥ 12,736 US$; low-income countries GNI ≤ 1,045 US$

The NatCat Insurance Gap for Australia:
uninsured losses as a percentage of overall losses in Australia 1980 – 2017

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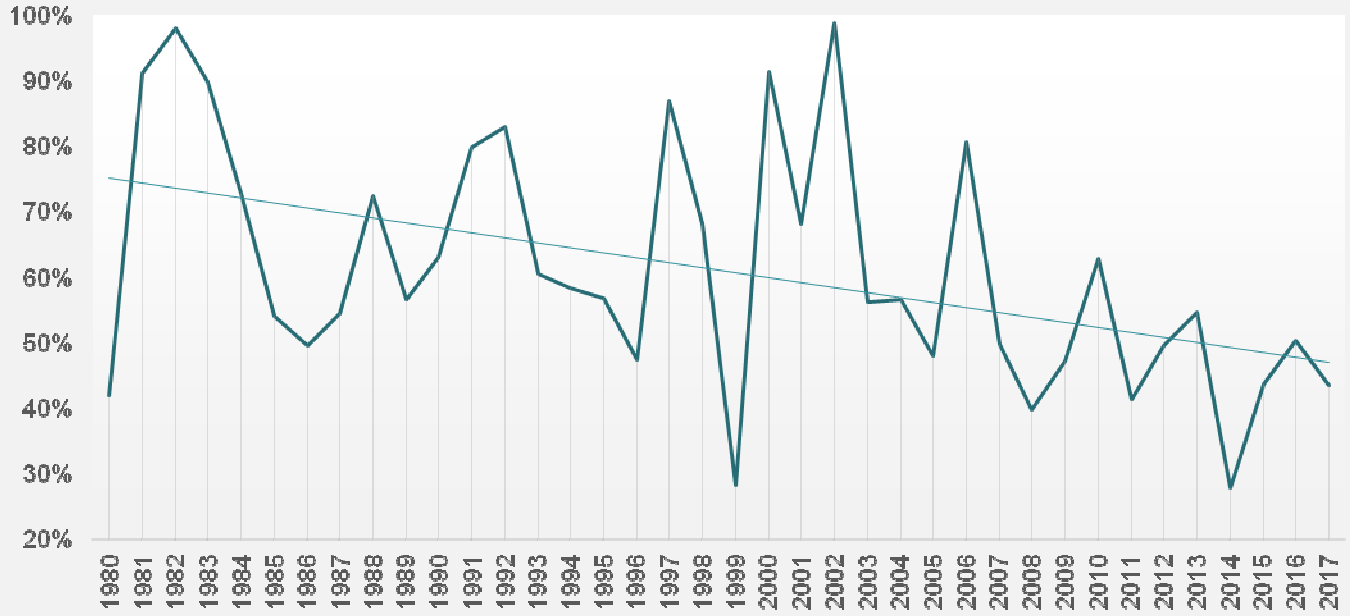
Insurance gap decreasing esp. since the beginning of the 21st century



Are you prepared?

of hazards are rising while metropolitan areas and their value concentrations are also growing. Will your business withstand the ever-increasing perils?

Rely on the financial strength of Munich Re and our expertise as a strong partner to safely withstand large nat cat events – even the unexpected ones.

Global temperature anomaly 1880-2017

17 of the 18 warmest years fall in the period 2001-2017

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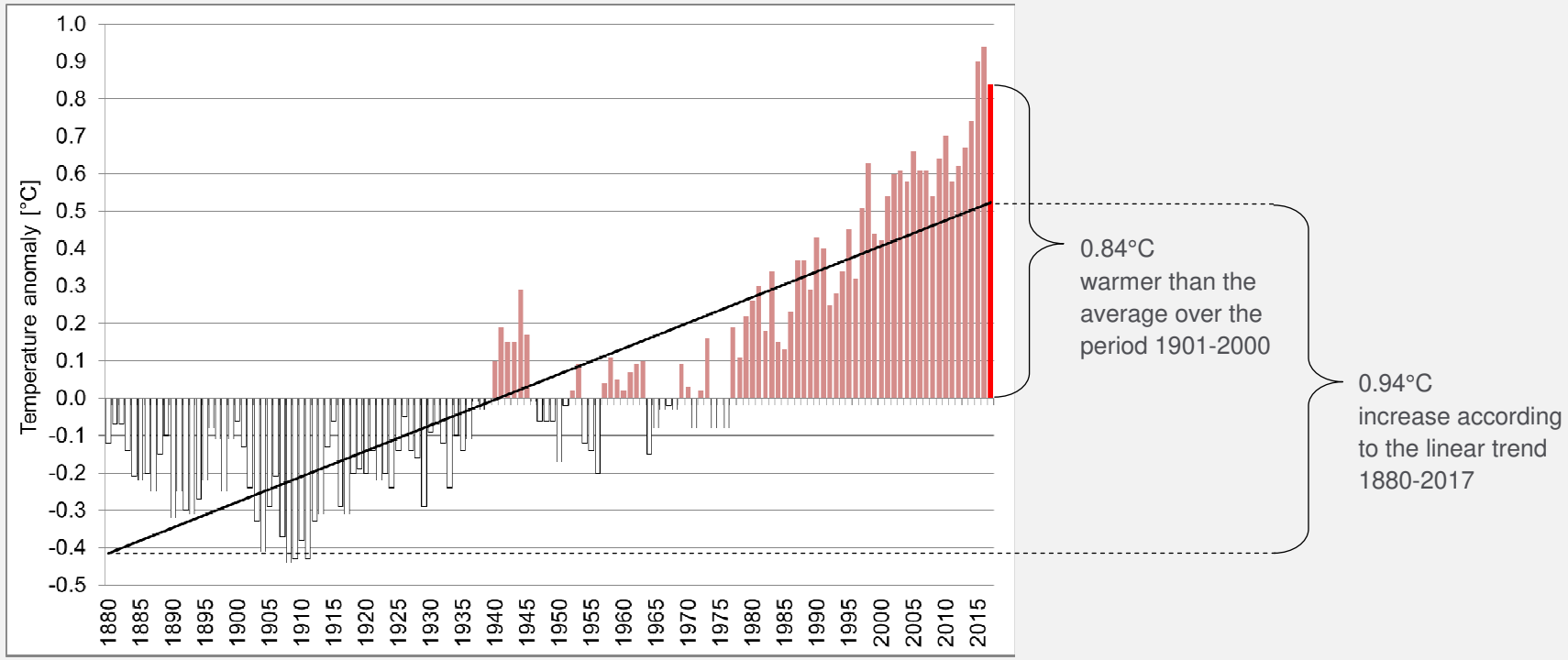
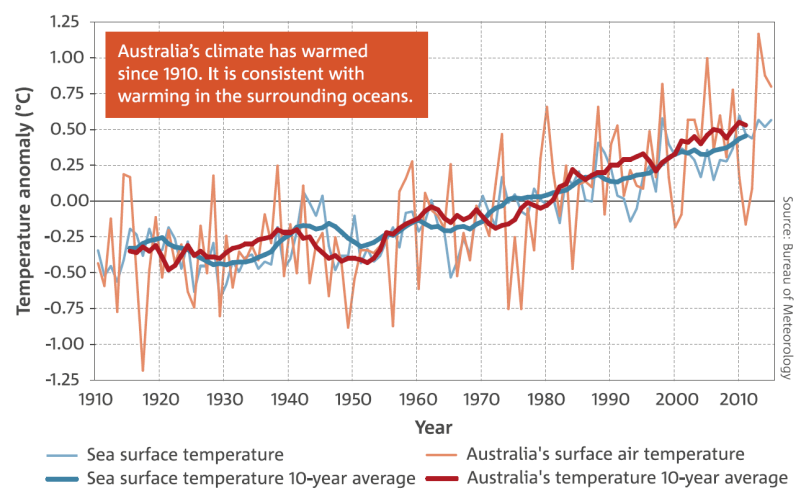
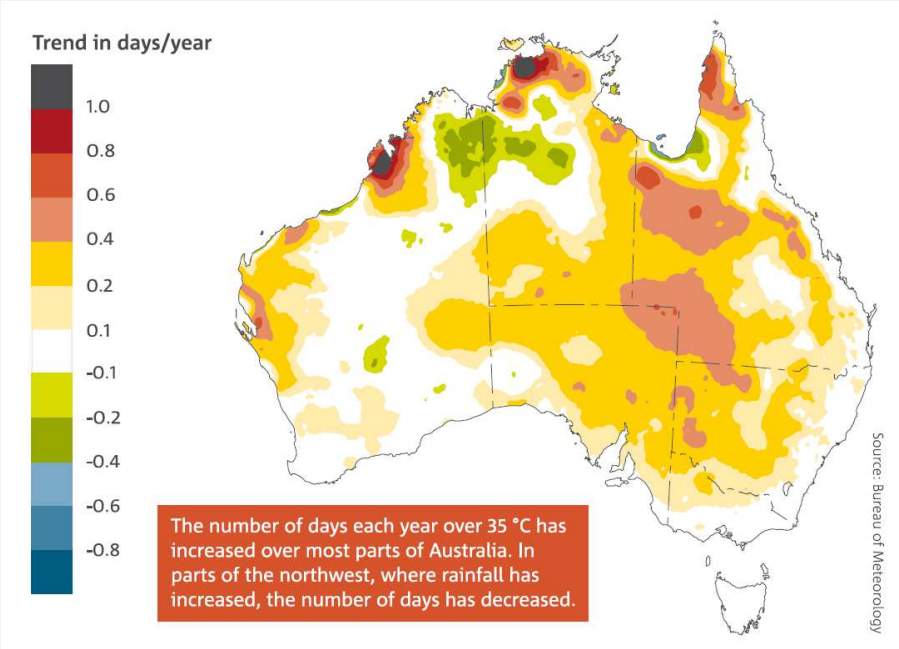


Source: Munich Re, January 2018, based on data of National Centers for Environmental Information/NOAA.

Trends in hot weather in Australia





The trend in annual number of days per year >35 °C from 1957–2015. An increase of 0.2 days/year since 1957 means, on average, that there are almost 12 more days per year over 35 °C.

Source: CSIRO amd BoM: State of the Climate 2016

Rainfall deciles for the growing season (Apr-Oct) in Australia (1996-2015)

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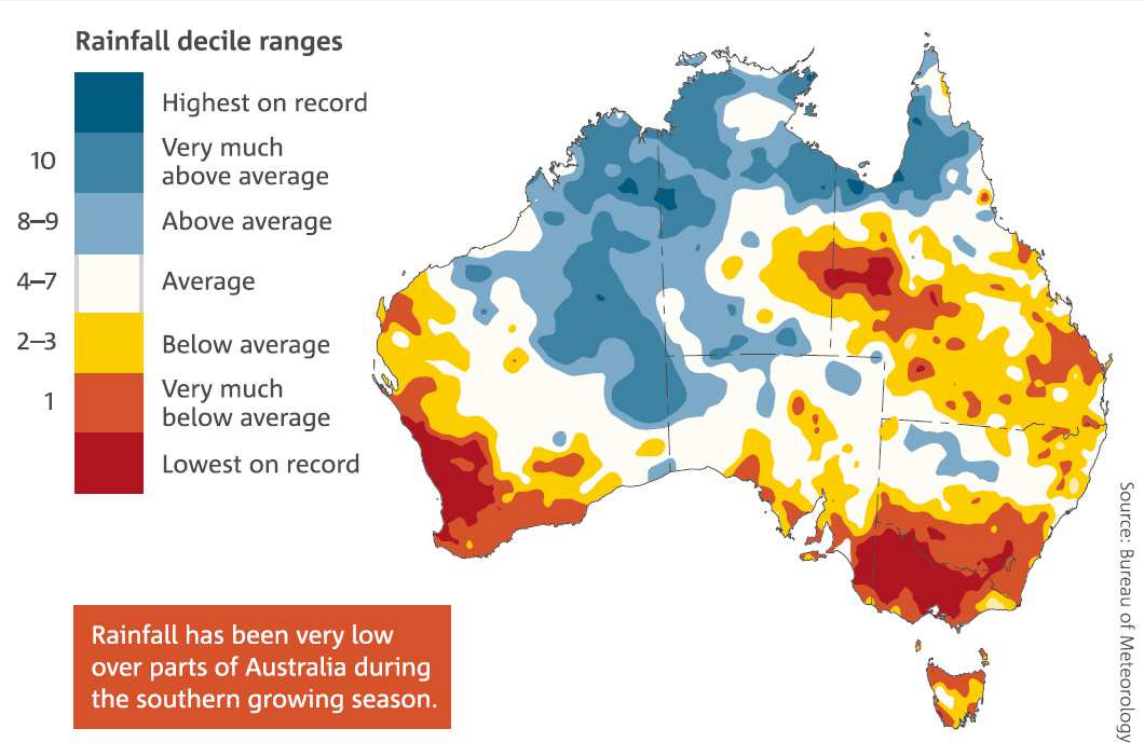

Growing season (April–October) rainfall deciles for the last 20 years (1996–2015). A decile map shows where rainfall is above average, average or below average for the recent period, in comparison with the entire rainfall record from 1900.

Source: CSIRO amd BoM: State of the Climate 2016

Global sea level rise 1900 - 2017

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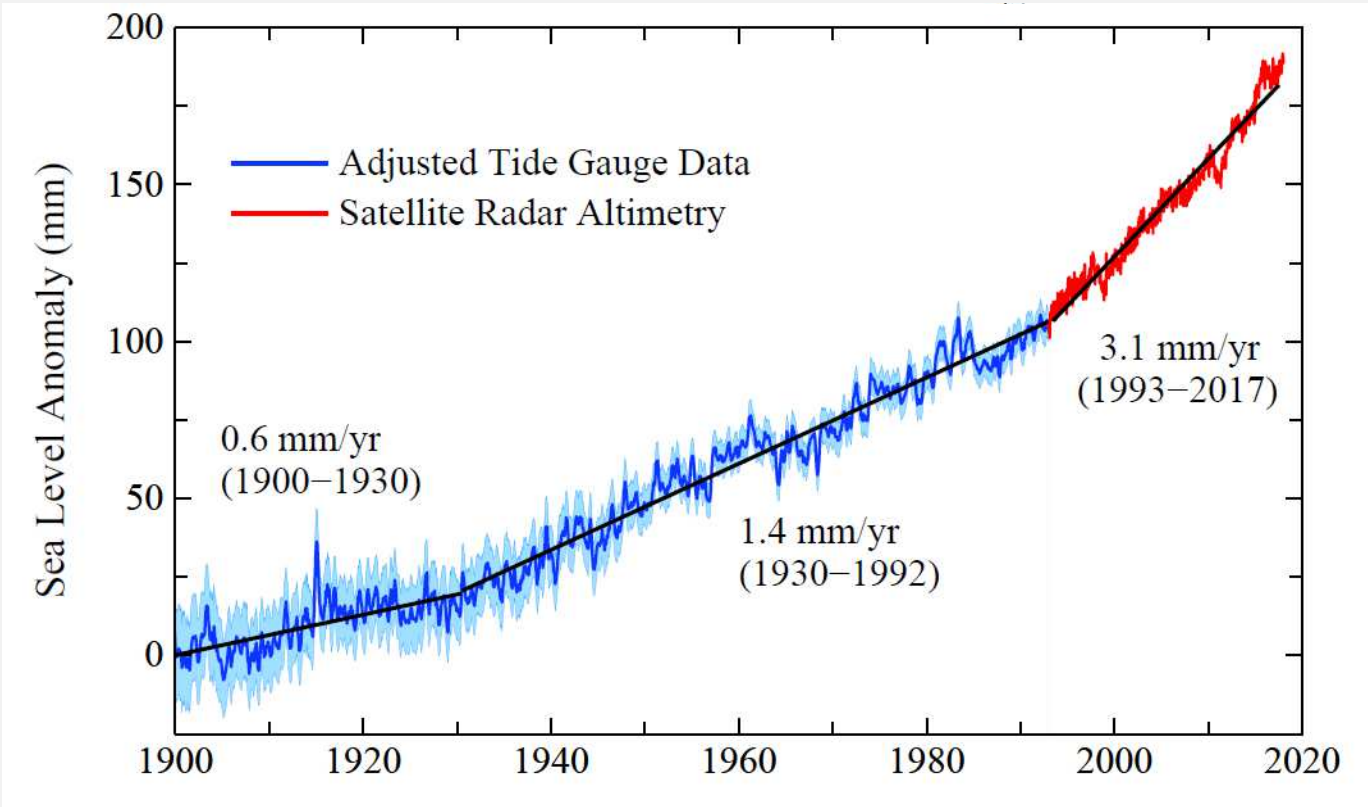

Source: Columbia University

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Knowledge + data: key to develop adaptation measures

1: historical loss events and (potential) trends, e.g. NatCatSERVICE Tool

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Knowledge + data: key to develop adaptation measures

2: Making use of hazard data – Munich Re's NATHAN / digital intelligence

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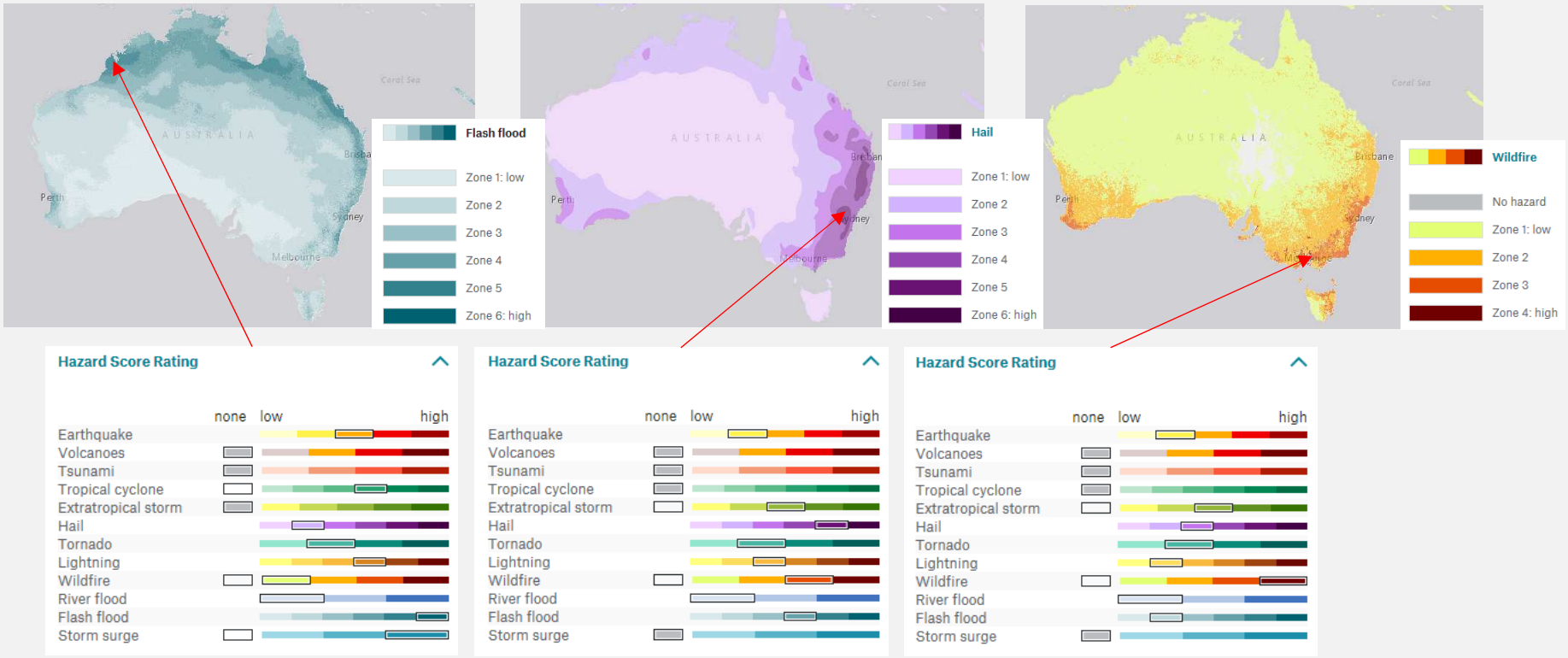

Improving economic resilience through financial adaptation mechanisms -> impact of natcat insurance systems on GDP development

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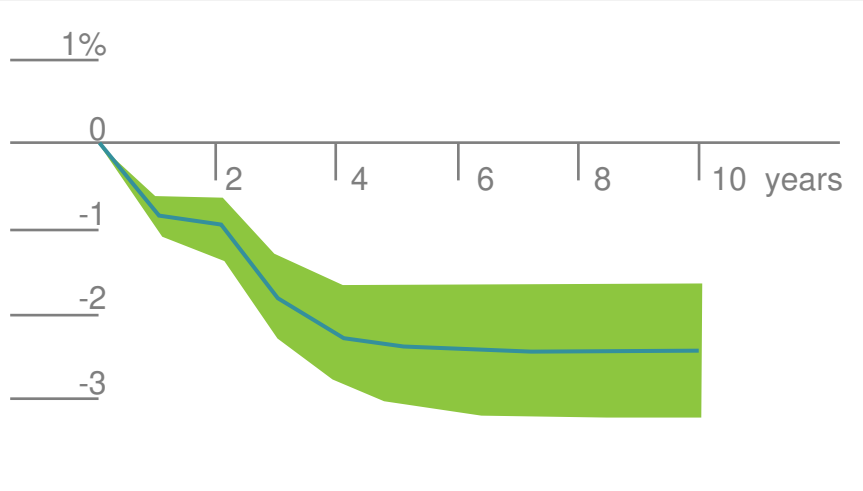
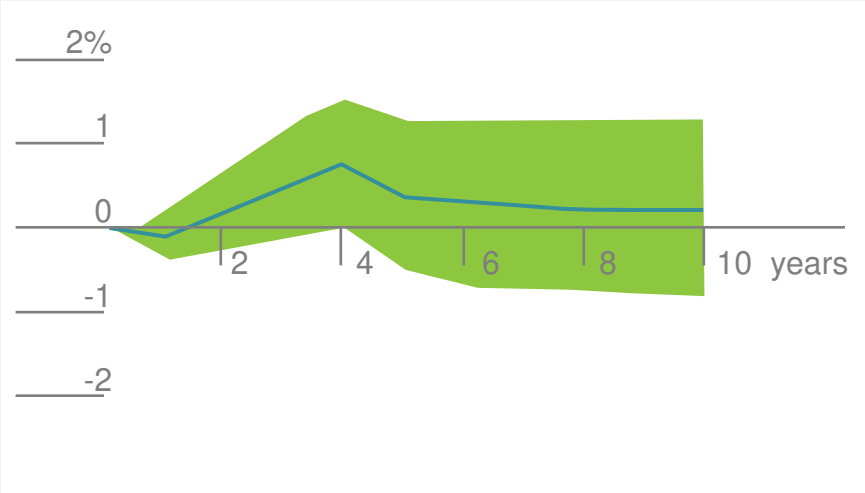
Countries without a natcat insurance system



With a comprehensive natcat insurance system



Economic recovery faster in jurisdictions with adequate risk management / risk transfer solutions

Source: Munich Re, based on von Peter et al., Bank for International Settlements, 2012

NatCat Public Private Insurance Partnerships in OECD countries with long track record – in non-OECD countries growing

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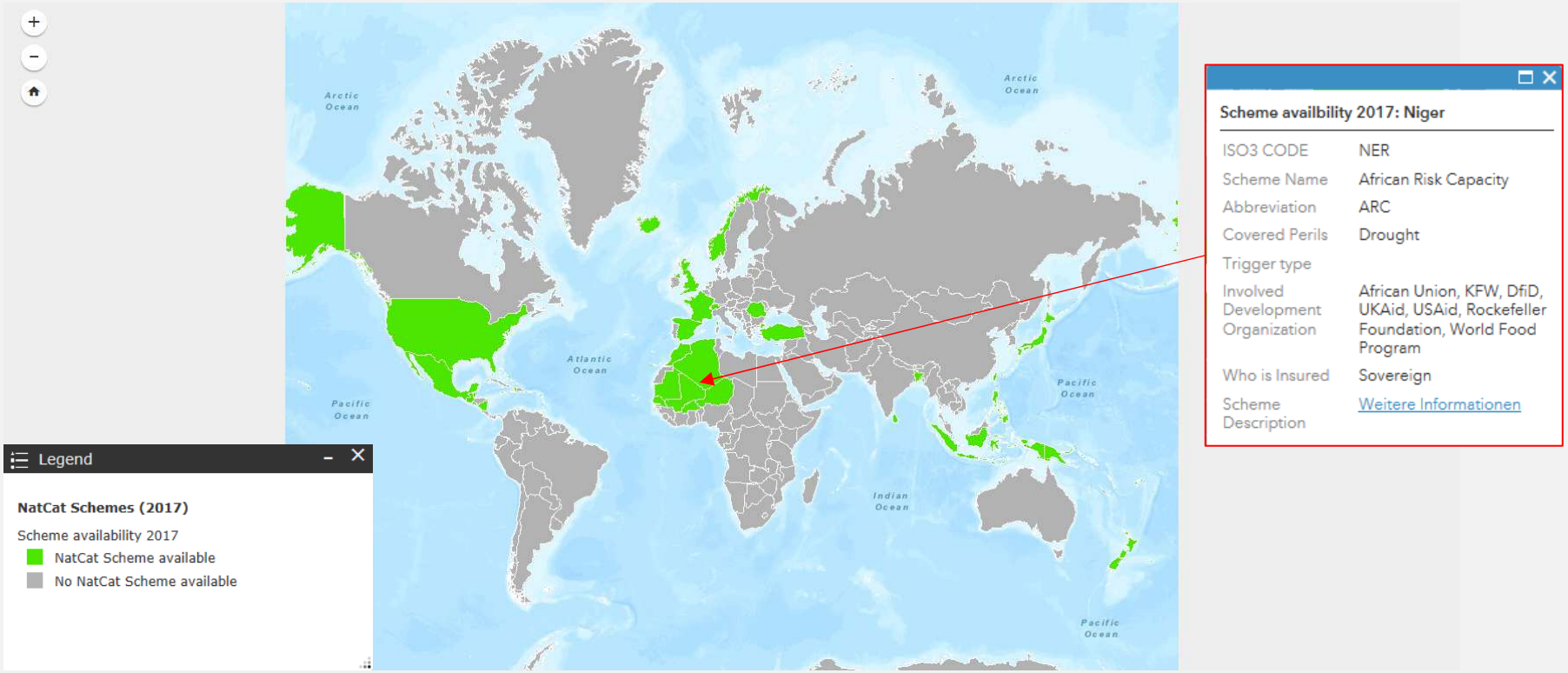

Source: Munich Re / Safir (04/2017)

Best practices for ex ante disaster risk insurance schemes
governments play a pivotal role in enhancing resilience

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	Protection for households/private sector	Sovereign risk protection
		
	Middle class	Low income & governments
Policyholder	**Private** households or companies	**Governments** (often the Ministry of Finance)
Funding / Government role	Governments creates legal and regulatory framework for **compulsory insurance**	Part of the **federal budget** government decides about allocation of resources in cases of nat. disasters
Insured interest	**Private property**	**Public assets** and/or ex-ante financing of **emergency response**
Examples	• TCIP (EQ, fire, explosion, landslide; Turkey) • NFIP (United States) • Flood Re (United Kingdom)	• CCRIF (emergency response) • PCRIC (emergency response) • FONDEN (public assets)

Source: Munich Re

Munich Re's activities relating to climate change

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RISK ASSESSMENT	RISK TRANSFER SOLUTIONS	ASSET MANAGEMENT
Detecting and assessing climate change impacts on frequency and intensity of natural hazards	Realizing business growth areas as a leading provider of risk transfer solutions for renewable energies and climate change-related adaptation products	Supporting the expansion of renewable energies and infrastructure projects with our sustainable investment strategy

Carbon neutrality of Munich Re
Munich: since 2009, reinsurance worldwide: since 2012, Munich Re (Group): since end 2015

Initiating innovative climate adaptation projects
such as Munich Climate Insurance Initiative (MCII)

Source: Munich Re

Munich Re's Australia & New Zealand Publication and Web Portal

http://www.munichre.com/australia/homepage/index.html

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Thank you for your attention!

Ernst Rauch

Contact: ERauch@munichre.com
Website: www.munichre.com

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