



CLIMATE CHANGE AND IMPACTS



CLIMATE CHANGE – THE CHALLENGE OF THE 21ST CENTURY



- >> MUNICH RE'S DATA SHOW: CLIMATE CHANGE IS HAVING A VISIBLE IMPACT ON NATURAL CATASTROPHE LOSSES
- >> THE WORLD CLIMATE SUMMIT IN COPENHAGEN MUST LAY DOWN THE MAIN CORNERSTONES FOR AN AGREEMENT
- >> BOLD CLIMATE PROTECTION MEASURES OFFER PIONEERS MAJOR BUSINESS POTENTIAL

Record intensities and losses from natural catastrophes

The hundred-year flood in the Elbe region in the summer of 2002

The 450-year event of the hot summer of 2003,
which caused more than 70,000 heat deaths in Europe

The first ever South Atlantic hurricane in March 2004,
with damage in Brazil

India's highest 24-hour precipitation amount:
944 mm in Mumbai on 26 July 2005

2005: Hurricane season with record number and intensities
of tropical cyclones (Katrina: most expensive single event)

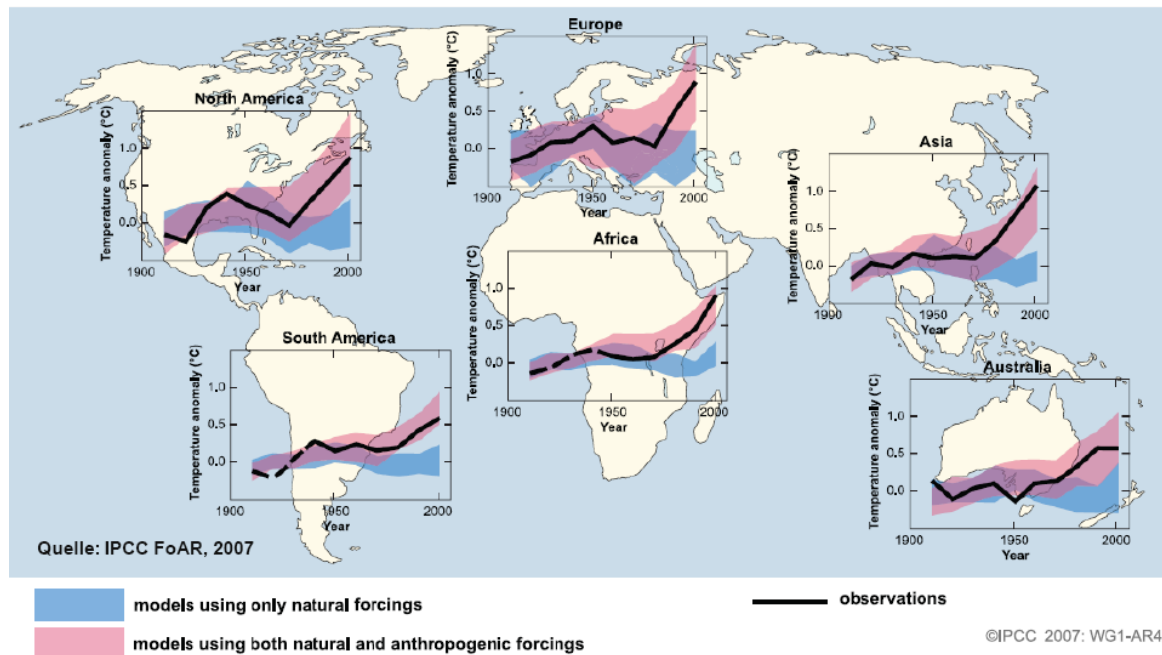
In October 2005, Hurricane Vince formed close to Madeira, reaching the
northernmost and easternmost point of any tropical cyclone

2007: Kyrill gave rise to
Germany's largest winter storm loss

2007: Largest losses ever
caused by flooding in the UK

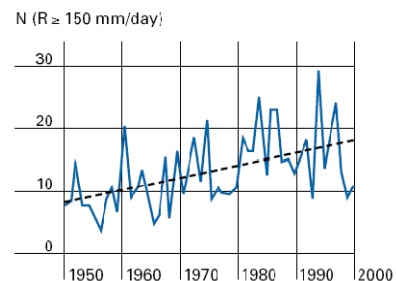
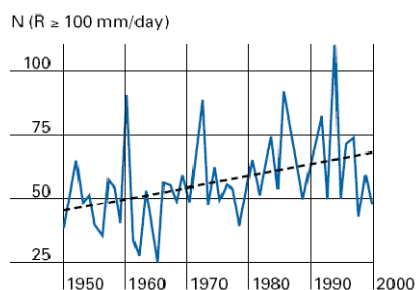
2009: Record temperatures in Australia
with catastrophic bush fires

Global warming is real! Continental temperature changes



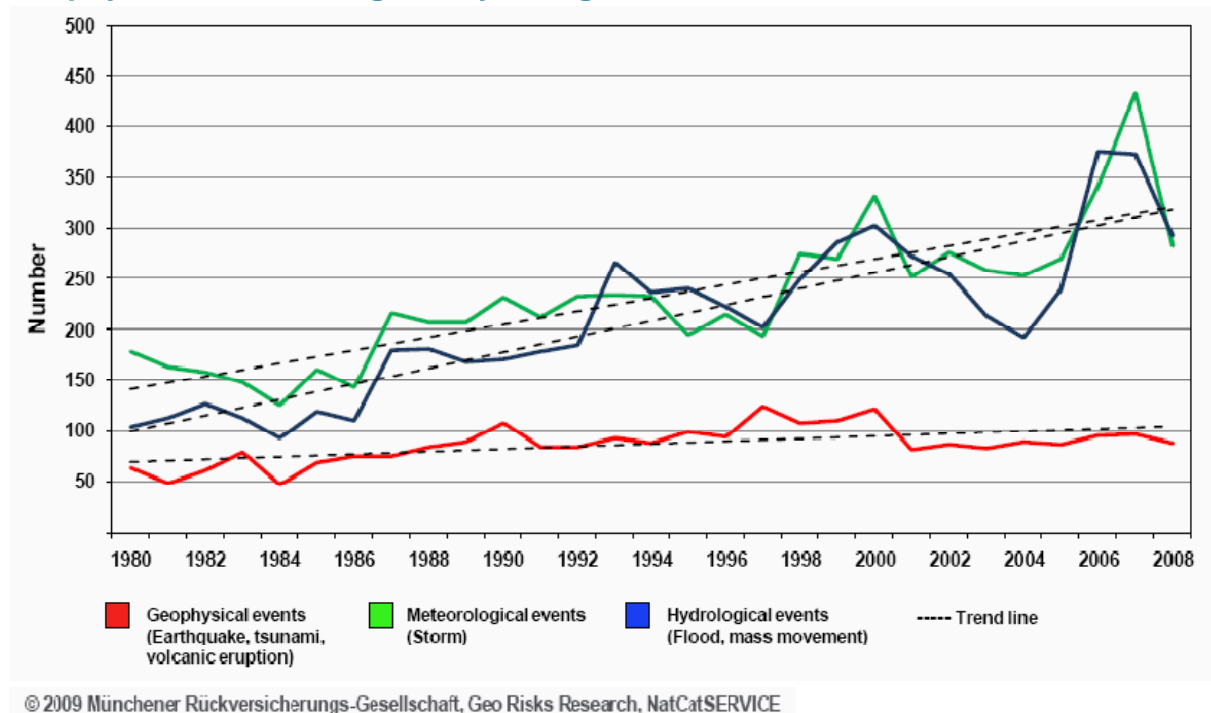
>> www.ipcc.ch > Publications

Torrential rainfall increases – e.g. development of the summer monsoon Daily precipitation amount in India 1950–2000

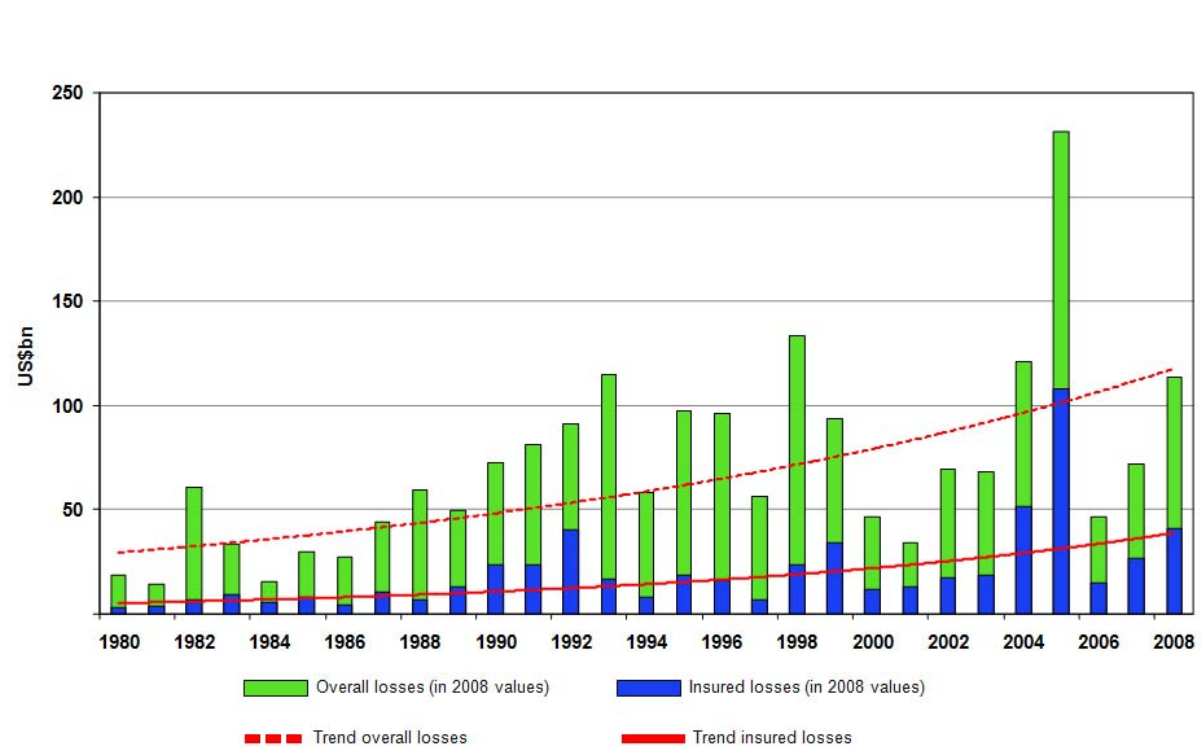


>> www.munichre.com > topics & solutions > climate change and insurance > monsoon
 >> Goswami, B.N. et al. (2006), Science 314

Global natural disasters 1980–2008: Geophysical, meteorological, hydrological events



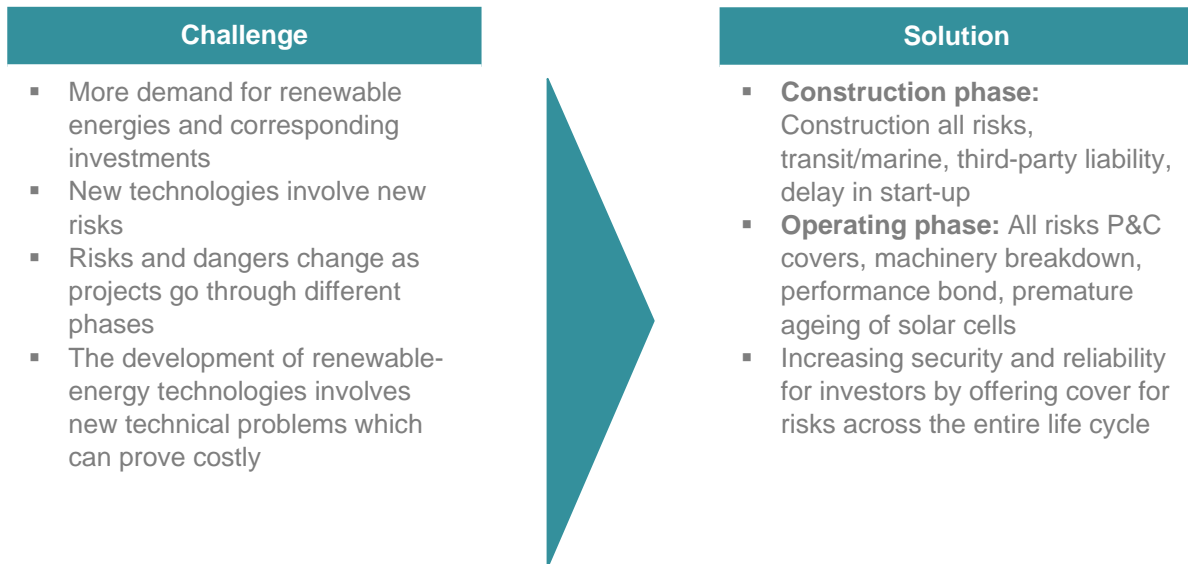
Economic and market losses caused by weather events 1980–2008



As at January 2009

Role of insurance in mitigation (1) – Security for renewable energy investors

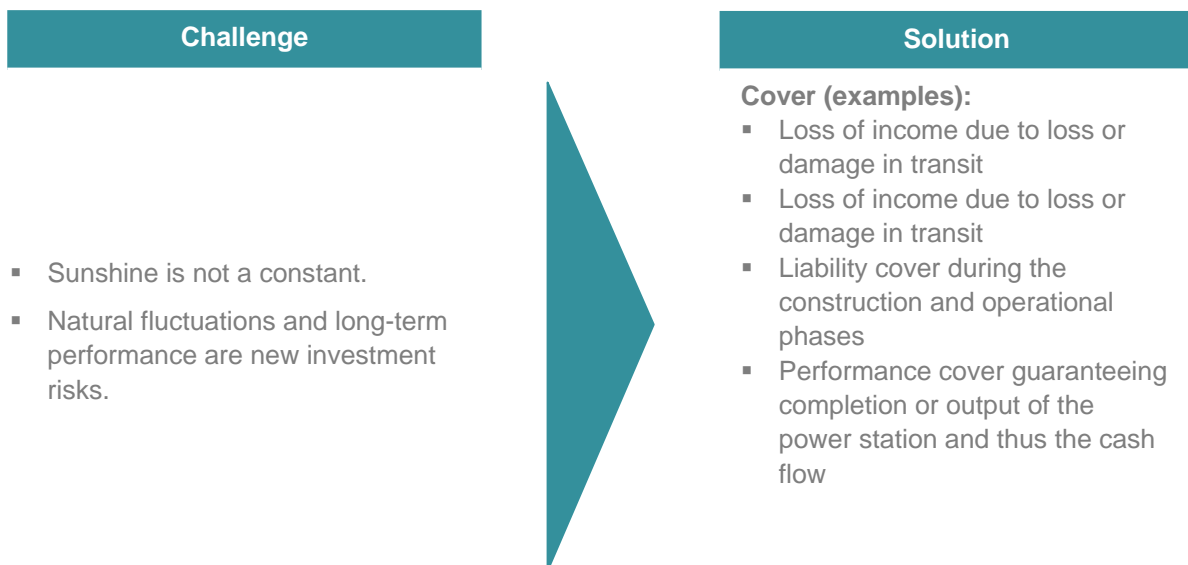
Insurance cover across the entire life cycle of renewable energy projects



>> Munich Re *newables* > p. 10ff.

Role of insurance in mitigation (2) – Security for solar energy investors

Global solar radiation and performance cover



>> Munich Re *newables* > p. 10ff.

Major industrial projects for mitigation – Munich Re spearheads Desertec Industrial Initiative



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>> www.munichre.com > Topics & Solutions > Renewables > Solar power

MCII: Contribution to adaptation – Insurance solutions for developing countries

Munich Climate Insurance Initiative (MCII)



MCII was founded in 2005 on initiative by Munich Re

Today MCII is a registered non profit organisation with members from:
Insurance, NGOs, Relief Organisations, Research Institutes, World Bank and independent experts.

Objectives:

Develop insurance-related solutions to help manage the impacts of climate change in developing countries.

Recent activities:

MCII-Submission to UNFCCC with concrete suggestions of insurance tools to be implemented in a Post-Kyoto-Protocol. Suggestions are being discussed by delegates of the climate negotiations on their way to Copenhagen.

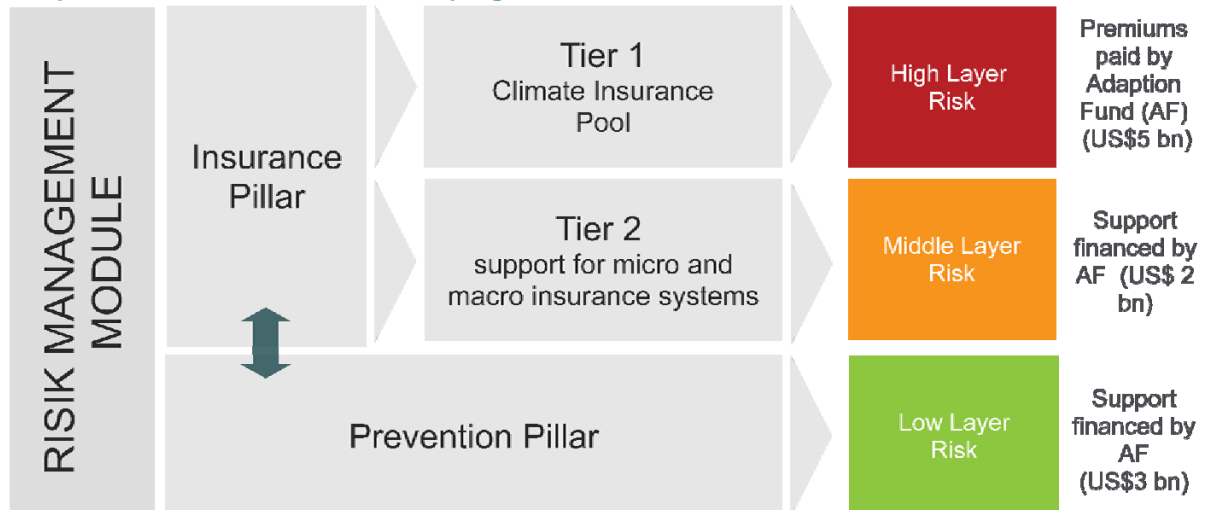


>> www.munichre.com > topics & solutions > climate change and insurance > world climate conference

>> www.climate-insurance.org

The Munich Climate Insurance Initiative's proposal to the United Nations Framework Convention on Climate Change (UNFCCC) –

Adaptation mechanisms for developing countries



The two-tiered insurance pillar

- Meets the principles set out by the UNFCCC
- Provides assistance to the most vulnerable, and
- Includes private market participation.

Rough estimated annual costs:
US\$ 10 bn

>> www.climate-insurance.org

Collaboration between Munich Re and the London School of Economics Evaluating the economics of climate risks and opportunities



THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE



Main areas of research activities

- quantifying the costs of a climate-related increase in natural catastrophes
- dealing with the uncertainties of climate models
- evaluating the potential and consequences of emissions trading systems and the appropriate design of such schemes
- estimating the economic impacts of climate change on the BRIC states (Brazil, Russia, India, China)



Institute: Centre for Climate Change Economics and Policy at LSE

Chair: Lord Nicholas Stern

Management: Prof. Rees (LSE), Prof. Gouldson (Leeds)

Project duration: 2008-2012

Sponsoring: £3m (~ €4m)

>> www.lse.ac.uk > Grantham Research Institute on Climate Change and the Environment > Countdown to Copenhagen

BACKUP

NATURAL CATASTROPHES 1980 - 2008



10 costliest natural disasters ordered by overall losses 1980-2008

Date	Loss event	Region	Overall Losses* (US\$m)	Insured losses* (US\$m)	Fatalities
25.-30.8.2005	Hurricane Katrina	USA	125,000	61,600	1,322
17.1.1995	Earthquake	Japan: Kobe	100,000	3,000	6,430
12.5.2008	Earthquake	China: Sichuan	85,000	300	70,000
17.1.1994	Earthquake	USA: Northridge	44,000	15,300	61
6.-14.9.2008	Hurricane Ike	USA: Caribbean	38,000	15,000	168
Mai - Sep. 1998	Floods	China	30,700	1,000	4,159
23.10.2004	Earthquake	Japan: Niigata	28,000	760	46
23.-27.8.1992	Hurricane Andrew	USA	26,500	17,000	62
Juni - Aug. 1996	Floods	China	24,000	450	3,048
7.-21.9.2004	Hurricane Ivan	USA: Caribbean	23,000	13,800	125

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As at January 2009

10 costliest natural disasters ordered by insured losses 1980-2008

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7.-21.9.2004	Hurricane Ivan	USA: Caribbean	23,000	13,800	125
19.-24.10.2005	Hurricane Wilma	Mexico, USA: Caribbean	20,000	12,400	42
20.-24.9.2005	Hurricane Rita	USA	16,000	12,000	10
11.-14.8.2004	Hurricane Charley	USA: Caribbean	18,000	8,000	36
26.-28.9.1991	Typhoon Mireille	Japan	10,000	7,000	62
26.12.1999	Winter storm Lothar	Europe	11,500	5,900	110

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As at January 2009

10 deadliest natural disasters 1980-2008

Date	Loss event	Region	Overall Losses* (US\$m)	Insured losses* (US\$m)	Fatalities
26.12.2004	Earthquake, Tsunami	South Asia	10,000	1,000	220,000
29.-30.4.1991	Cyclone, storm surge	Bangladesh	3,000	100	139,000
8.10.2005	Earthquake	Pakistan, India	5,200	5	88,000
2.-5.5.2008	Cyclone Nargis	Myanmar	4,000		84,500
Juli-August 2003	Heat wave	Europe	13,800	10	70,000
12.05.2008	Earthquake	China	85,000	300	70,000
21.6.1990	Earthquake	Iran	7,100	100	40,000
8.-19.12.1999	Flash flood, landslides	Venezuela	3,200	220	30,000
26.12.2003	Earthquake	Iran	500	19	26,200
7.12.1988	Earthquake	Armenia	14,000		25,000

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As at January 2009

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