

# The Role of Renewable Energy Investment in Tackling Global Environmental and Financial Risks

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# Munich Re the First Alerter to Global Warming in the Industry

## Flood Inundation

### 2.1 Climatic Variations

Investigations into the overall trend of claims experience are indispensable, and here climatic variations become most significant. Such investigations involve a study of thermodynamic processes such as, for example, the rising temperature of the earth's atmosphere (as a result of which glaciers and the polar caps recede, surfaces of lakes are reduced and ocean temperatures rise); changes in the earth's atmosphere due to the large-scale increase in areas irrigated and cultivated and increases in humidity resulting therefrom; and lastly the pollution of the earth's atmosphere, e.g. rise of the CO<sub>2</sub> content of the air causing a change in the absorption of solar energy. We wish to enlarge on this complex of problems in greater detail, especially as—as far as we know—its conceivable impact on the long-range risk trend has hardly been examined to date.

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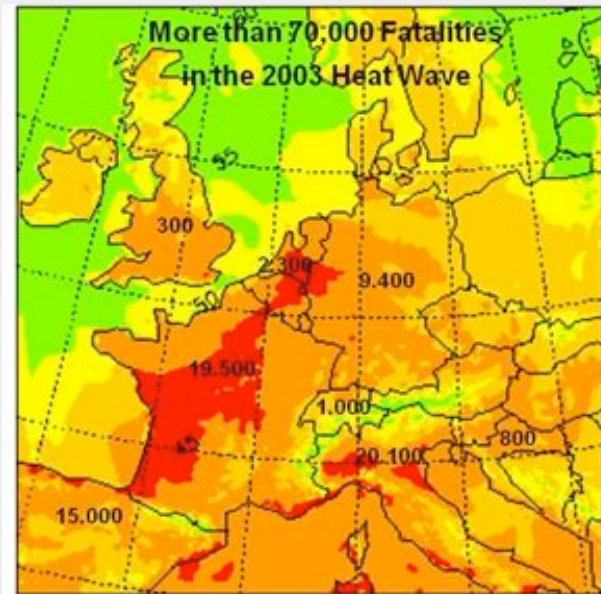
greater detail, especially as—as far as we know—its conceivable impact on the long-range risk trend has hardly been examined to date.

## MR-Publication Flood / Inundation (August 1973)

# Trends of Natural Disasters

The last years have brought records in natural disasters in respect to:

- Intensities
- Frequencies
- Damages and losses

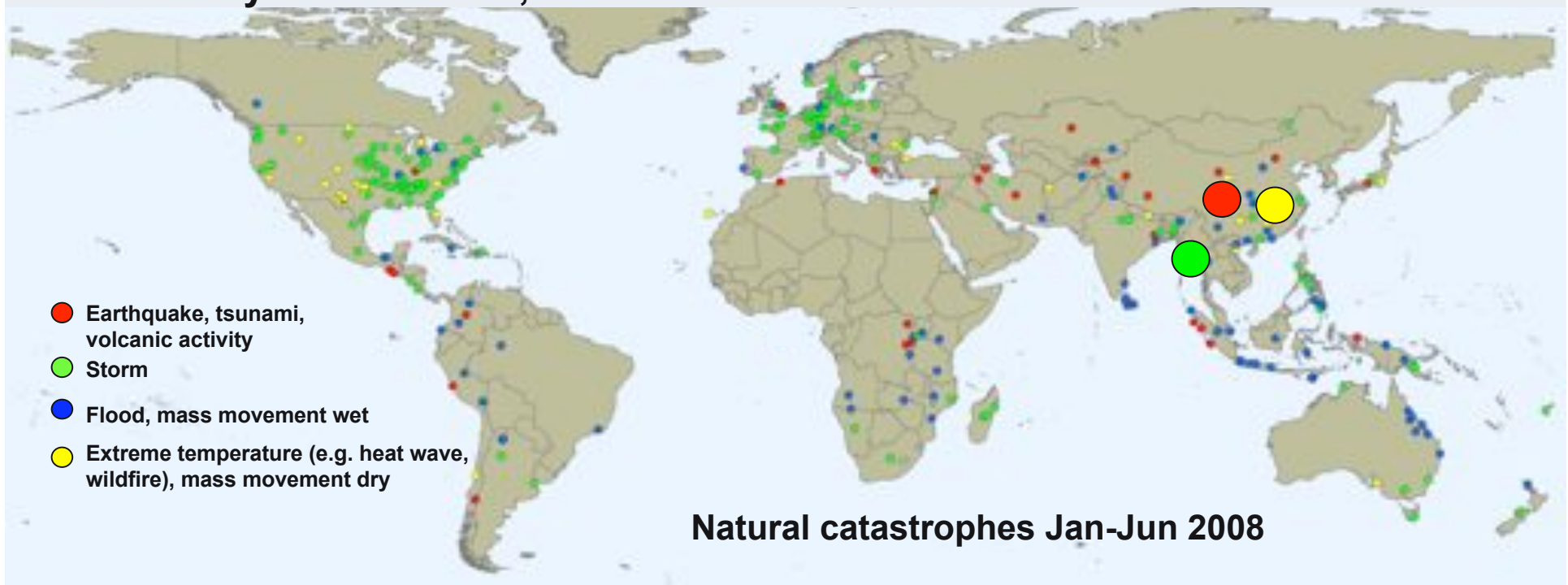


## Munich Re NatCatSERVICE®



One of the world's largest databases on natural catastrophes

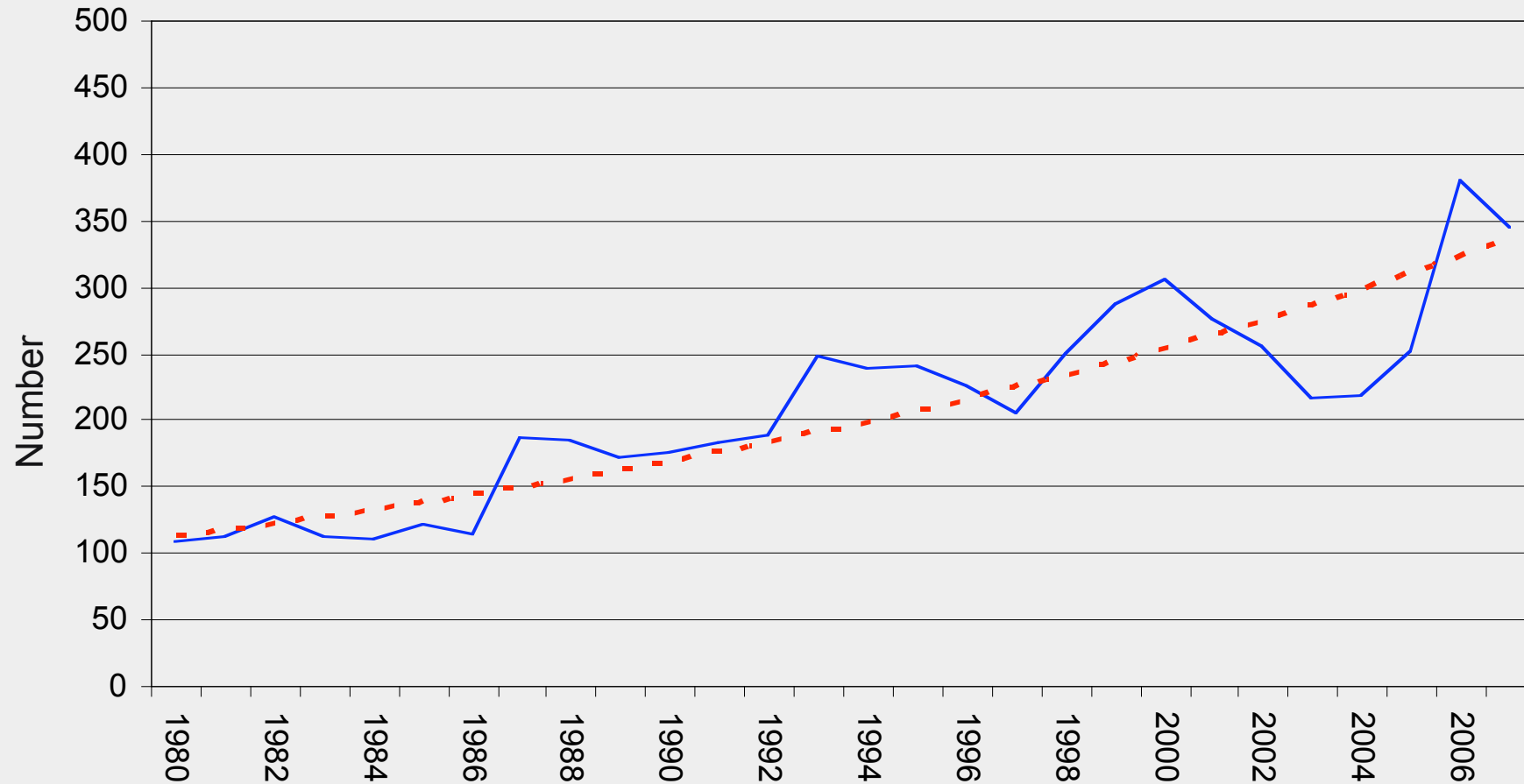
- From 1980 until today all loss events, for USA and selected countries in Europe  
all loss events since 1970
- Retrospectively all Great Disasters since 1950
- In addition all major historical events starting from 79 AD – eruption of Mt. Vesuvio  
(3,000 historical data sets)
- **Currently more than 25,000 events documented**



# Hydrological events globally 1980 – 2007

(Floods, Mass Movement)

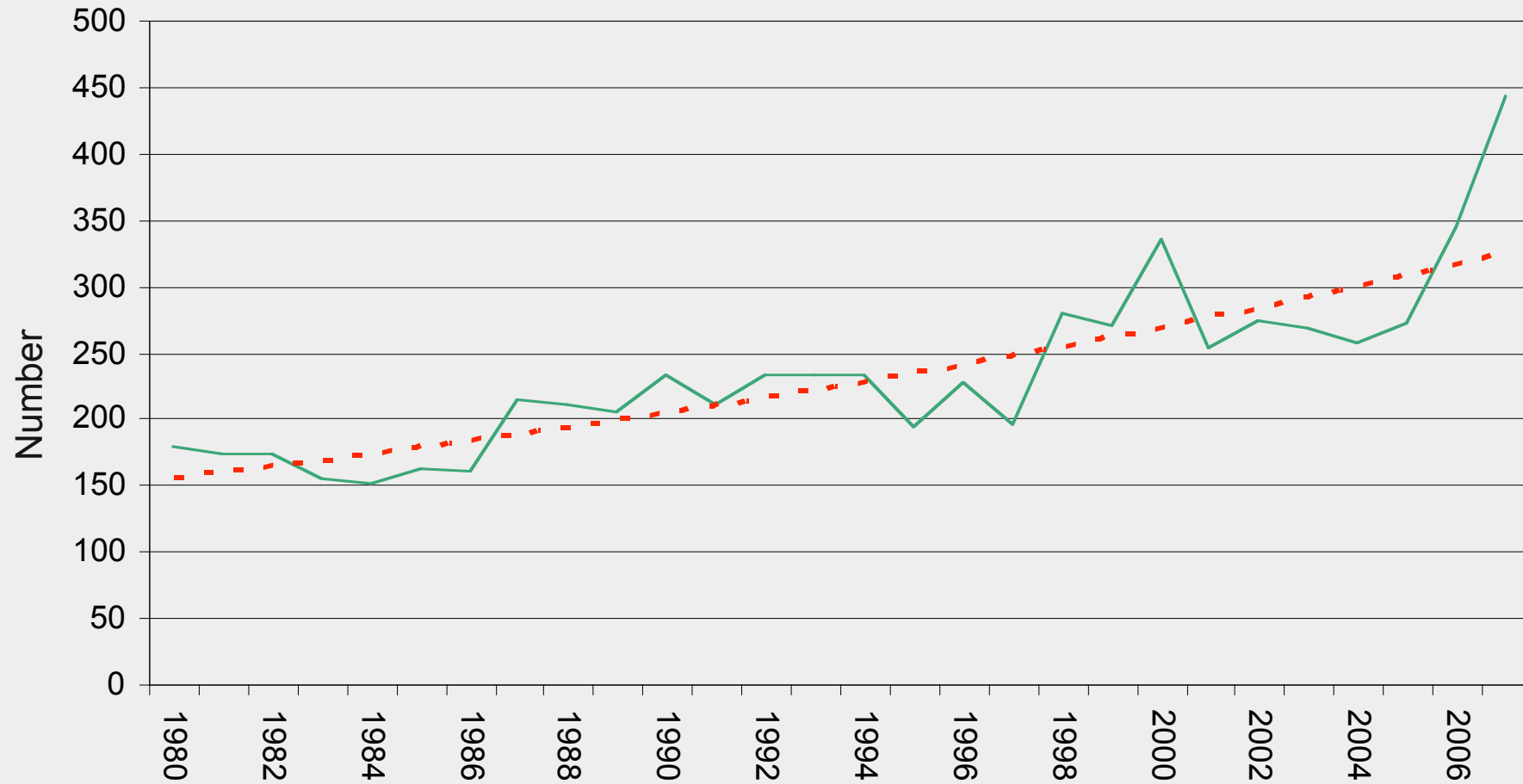
Number of Events – Trend Line



# Storm events globally 1980 – 2007

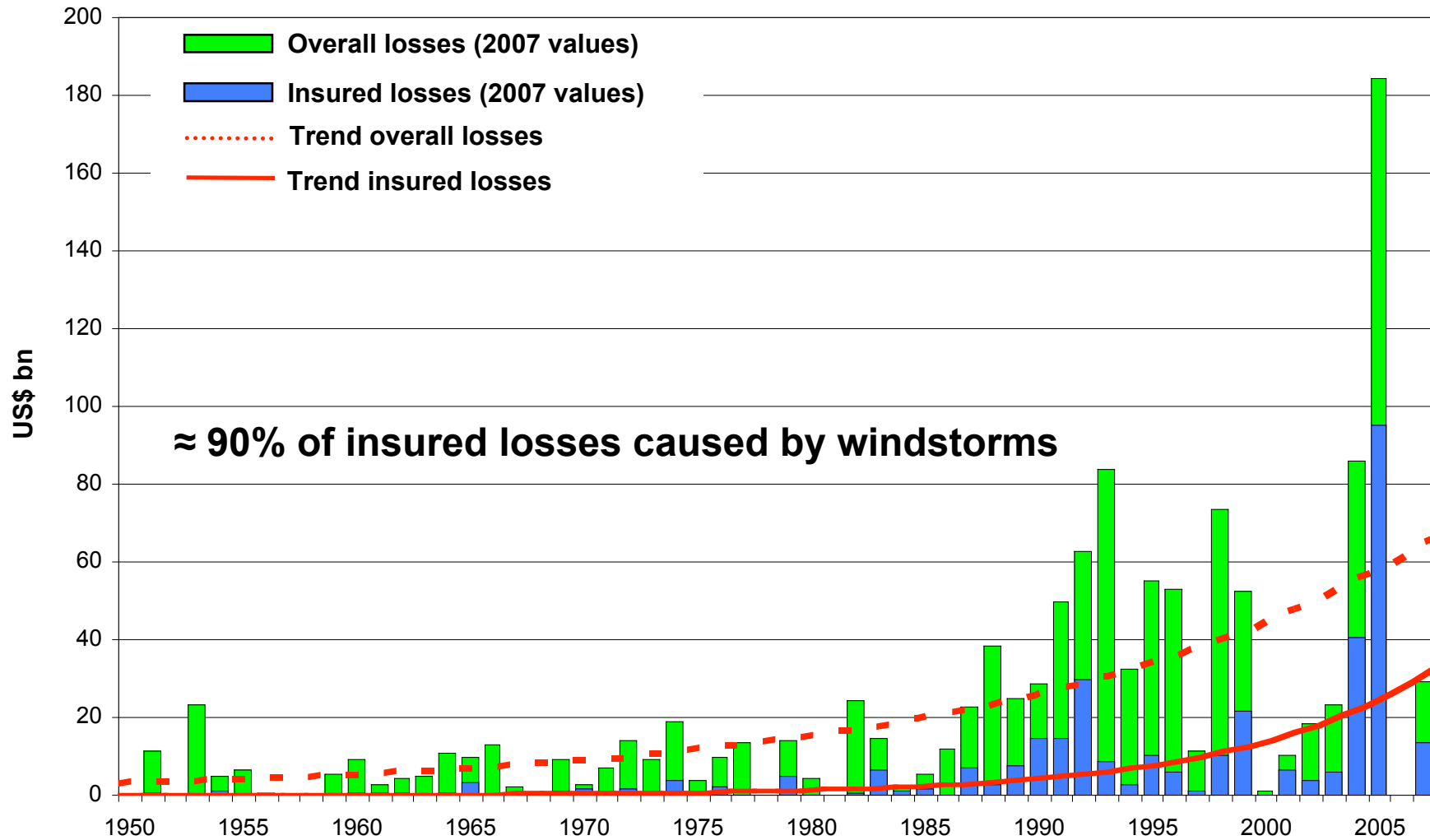
(Tropical Storms, Winter Storms, Tornados, Hail)

## Number of Events – Trend Line



# Great Weather Disasters 1950 – 2007

## Overall and insured losses



# Climate Change and Extreme Weather Events (IPCC, 2007)



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Phenomenon* and direction of trend	Likelihood that trend occurred in late 20th century (typically post 1960)	Likelihood of a human contribution to observed trend*	Likelihood of future trends based on projections for 21st century using SRES scenarios
Warmer and fewer cold days and nights over most land areas	<i>Very likely</i> <sup>c</sup>	<i>Likely</i> <sup>d</sup>	<i>Virtually certain</i> <sup>d</sup>
Warmer and more frequent hot days and nights over most land areas	<i>Very likely</i> <sup>e</sup>	<i>Likely (nights)</i> <sup>d</sup>	<i>Virtually certain</i> <sup>d</sup>
Warm spells/heat waves. Frequency increases over most land areas	<i>Likely</i>	<i>More likely than not</i> <sup>f</sup>	<i>Very likely</i>
Heavy precipitation events. Frequency (or proportion of total rainfall from heavy falls) increases over most areas	<i>Likely</i>	<i>More likely than not</i> <sup>f</sup>	<i>Very likely</i>
Area affected by droughts increases	<i>Likely</i> in many regions since 1970s	<i>More likely than not</i>	<i>Likely</i>
Intense tropical cyclone activity increases	<i>Likely</i> in some regions since 1970	<i>More likely than not</i> <sup>f</sup>	<i>Likely</i>
Increased incidence of extreme high sea level (excludes tsunamis) <sup>g</sup>	<i>Likely</i>	<i>More likely than not</i> <sup>h</sup>	<i>Likely</i> <sup>i</sup>

very likely > 90%

likely >66%

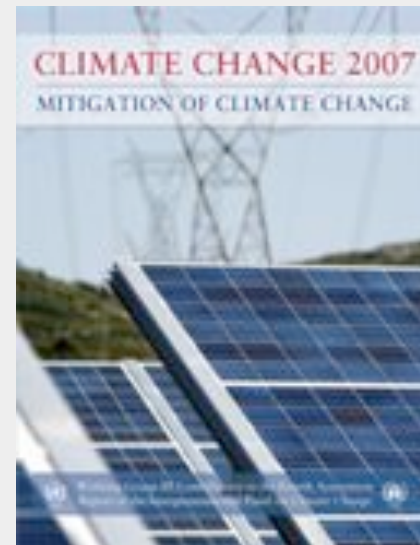
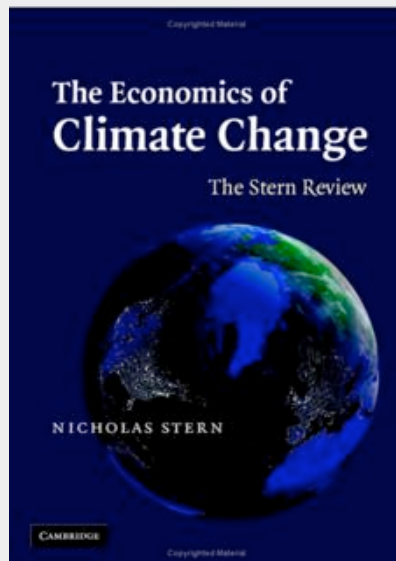
more likely than not > 50%



# Climate protection costs less money than the losses caused by unmitigated global warming

Stern Review and latest IPCC report:

Climate protection costs much less compared to the costs of increasing damages from an accelerating global warming!





## The role of insurance industry in partnership with society

- Provision of data on weather-related losses to science, political decision makers and the public
- Transparency of risks via risk measurement & risk adequate premiums  
-> sound actions, prevention, reduced loss loads for society
- Products promoting society's emissions reduction goals
- Insurance industry is a large investor in SRI market

# New Markets

Covers for renewable energy plants, energy efficiency technologies, CCS...

Windpower offshore



Quelle: Bundesverband WindEnergie e.V.

Wave power plant



Quelle: Ocean Power Delivery Ltd



Offshore Windfarm bei Copenhagen

Geothermal plant



Geothermiekraftwerk Unterhaching

Nr. 127/08  
Berlin, 09.06.2008

## Klimaschutzprogramm ist Motor für Wachstum und Beschäftigung

500.000 neue Jobs bis 2020/Gabriel stellt Studie zu den wirtschaftlichen Effekten  
des Meseberg-Pakets vor

### Investitionen für ein klimafreundliches Deutschland

Eine Studie im Auftrag des  
Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit

Zwischenbericht

Potsdam / Karlsruhe, Mai 2008

E. Jochen<sup>1</sup>, C. Jaeger<sup>2,3</sup>, A. Battaglin<sup>4</sup>, H. Bracke<sup>5</sup>, C. Cremer<sup>1</sup>, W. Eckhammer<sup>1</sup>, H. Förster<sup>1</sup>, A. Haas<sup>1</sup>, E. Henning<sup>1</sup>,  
F. Idrobova<sup>1</sup>, J. Köhler<sup>1</sup>, D. Köwener<sup>1</sup>, J. Krause<sup>1</sup>, W. Lass<sup>1</sup>, J. Lillieskim<sup>1</sup>, W. Mannhart<sup>1</sup>, F. Meißner<sup>1</sup>, M. Müller<sup>1</sup>, B.  
Pflüger<sup>1</sup>, P. Radgen<sup>1</sup>, M. Ragwitz<sup>1</sup>, F. Reitze<sup>1</sup>, K. Saure<sup>1</sup>, W. Schade<sup>1</sup>, F. Senfuss<sup>1</sup>, F. Toro<sup>1</sup>, R. Wehr<sup>1</sup>,  
M. Weibche<sup>1</sup>

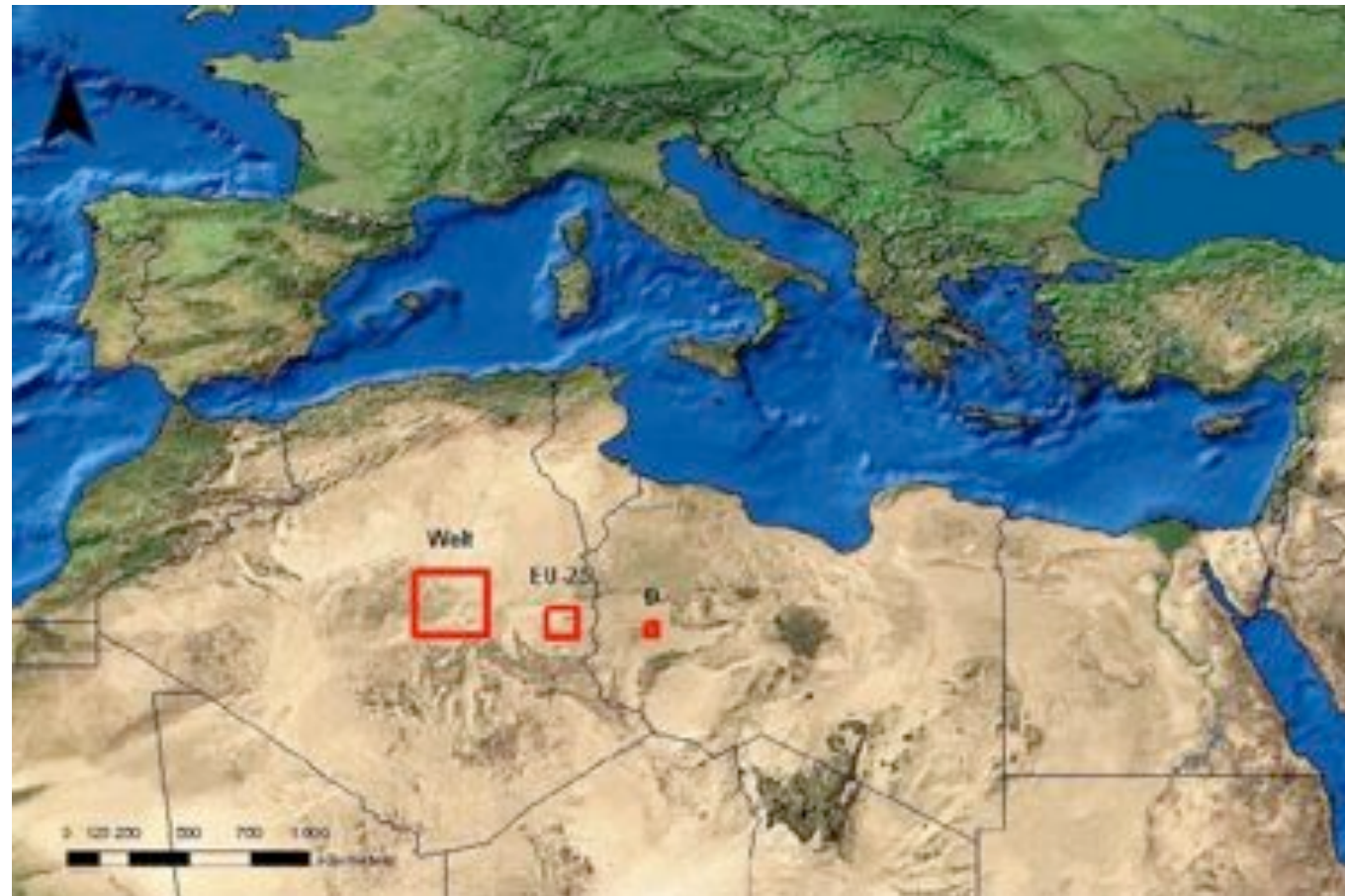
<sup>1</sup> BfU für sozialverträgliche Ressourcennutzung (BSR)

<sup>2</sup> European Climate Forum (ECF)

<sup>3</sup> Fraunhofer-Institut für System- und Innovationsforschung (ISI)

<sup>4</sup> Potsdam-Institut für Klimafolgenforschung (PIK)

# High Potential for Solar Energy

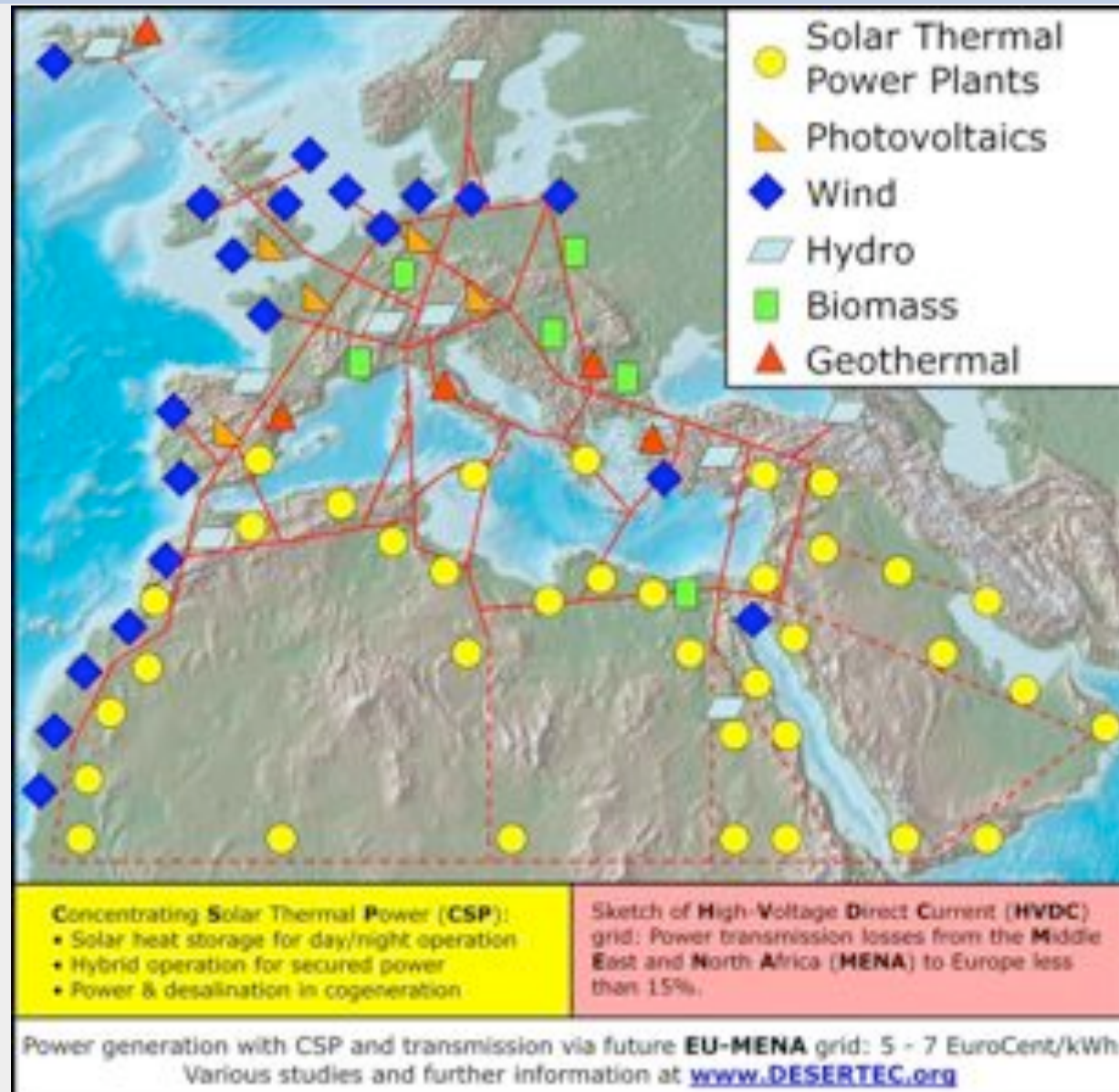


The area of the red squares theoretically would suffice to replace the total electricity used currently globally in the EU25 and in Germany by existing technology solar thermal power plants (CSP). (Data from DLR)

Source: [http://www.desertec.org/downloads/summary\\_de.pdf](http://www.desertec.org/downloads/summary_de.pdf)

# The Solution: a Smart Network of Renewable Energies

Production of specific types of renewable energy in the regions with the highest yield





Munich Re is chairing the „Finance Forum: Climate Change“ of the „High Tech Strategy“ of the Federal Government in Germany.

Objectives:

Financing and risk cover of new technologies for climate change mitigation, such as renewable energies:

- detection of investment obstacles,
- initiate research to close knowledge gaps

Extension of the dialogue between research and financial market

# Carbon neutrality of Munich Re

Munich Re Munich: 2009

Munich Re Reinsurance worldwide: 2012

Measures :

- Reduction of emissions per employee
- Usage of "green" electricity
- Investment in renewable energies and afforestation
- In return for remaining emissions investment in emission certificates used for climate-protection projects in emerging countries





# Conclusions

- Global warming is the largest long term problem humankind is facing in this century
- Quick action to mitigate global warming is necessary to avoid unmanageable risks
- The only sustainable solutions are to increase energy efficiency and to switch energy production to renewable energies
- The financial crisis triggering large fiscal investment programs should be seen as a big chance to direct these investments into sustainable solutions, both for a future proof energy supply and for climate protection
- The insurance industry supports investments into innovative energy technologies by providing custom made risk covers and thus making investments more attractive
- The insurance industry itself, like Munich Re, has a high potential to become a large investor into renewable energies