

TESTIMONY ON RISKS OF HYDRAULIC FRACTURING

BY

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January 31, 2012

Hydraulic fracturing (fracking) for shale gas is a troubling technology. Fracking for shale gas, with its threats of water and air contamination, of green-house-gas (GHG) emissions, and the ruined lives of farmers and ranchers, has caused many communities to ban it from use. Yet, with proper regulations and monitoring, shale gas has the potential to lower GHG emissions by replacing dirtier coal plants.

Are you willing to impose the regulations on fracking for shale gas in Kansas that will protect our air, water, and the future of farming and ranching in Kansas?

### **WATER CONTAMINATION**

The numbers of confirmed cases of water contamination from fracking continue to grow. EPA recently confirmed a contaminated aquifer in Wyoming. Other water supplies like streams and wells are being contaminated and reported almost every week. The number of contaminated wells reported would be much higher were it not for the fact that proper regulations and testing of wells **before fracking started** near water supplies, to establish baseline levels for monitoring, had not been done. Without these pre-drilling tests of water supplies, and required full disclosure of fracking chemicals, it is next to impossible to hold gas companies responsible for the water they are contaminating. If fracking is as safe as the gas companies say, then they should have no problem providing COMPLETE DISCLOSURE of the chemicals they use, and paying for pre-drilling water testing of all water sources within 1 mile of the drilling sites.

### **FRACKING EXEMPT FROM REGULATIONS**

One must ask why the gas industry thought it necessary to seek, in 2003-2005, exemptions for fracking from the Clean Water Act, Safe Drinking Water Act, Clean Air Act, CERCLA (Superfund) Resource Conservation and Recovery Act, and the Community Right to Know Act, that they received as part of the EPLA of 2005. If fracking is safe then why the need for these extraordinary exemptions that place farmers and ranchers at such risk?

### **DUKE UNIVERSITY/NATIONAL ACADEMY OF SCIENCES STUDY**

A Duke University study, supported by the National Academy of Sciences, released in 2011, tested water wells within one kilometer of fracking sites in Pennsylvania and New York. Out of 68 wells tested, 51 had hazardous levels of contamination. The Duke scientists have suggested several steps that need to be taken to prevent fracking from ruining water supplies and the lives of the people near these sites. The farmers using these wells swear that the water was okay until fracking started.

### **RADIATION IN FRACKING FLUIDS**

The DOE is spending \$2 million to study the problem of high levels of radiation in the fracking fluids that flow back to the surface at the sites. They found levels of radium 226 at 16,000 picoCuries/liter of water at the frack sites holding ponds. EPA's safe drinking water level for that radiation is 5 picoCuries/liter. We must monitor for radiation in water in Kansas.

### **EARTHQUAKES FROM FRACKING FLUID INJECTION WELLS**

The issue of earthquakes caused by the waste fracking fluids placed in injection wells is of serious concern for Kansas. Several geophysicists have confirmed that the connection between earthquakes and fracking fluids in injection wells is real and must be monitored. In Kansas, one major concern is the possible damage at Wolf Creek nuclear plant in Burlington. One earthquake there could cause lethal doses of radiation to be carried by our prevailing winds into the Topeka-Kansas City urban centers.

### **THE COSTS OF GHG FROM FRACKING**

Munich Re, the giant global reinsurance company, has a graph that illustrates the costs of natural disasters since 1980. Their scientists and economists are convinced that climate change is producing the crippling economic costs predicted by the "Stern Report On the Economics of Climate Change." I will tell you now that 2011 was the costliest natural disaster year in history at \$380 billion dollars. The graph illustrates that these costs since 1980 have been on a steady increase that closely parallels the increase of GHG in the atmosphere. Munich Re believes that failure to reduce GHG emissions will lead to economic disaster for the USA and a bleak future for our children. The droughts, floods, record heat waves, tornadoes, storms and hurricanes, and other such disasters are predicted to increase in severity and do great harm to us. Because of this threat we must require gas companies to use methods like the "green completion" to reduce or eliminate fugitive methane emissions from fracking projects. Without these regulations our economic future is in peril.

Fracking also creates hazardous air emissions that are threats to any life near the sites. There are over 700 different chemicals used in the fracking process. Many more chemicals are released from the fractured shale rock. NOx is produced at hazardous levels at fracking sites that turns into smog that affects children, the elderly, and people with asthma and respiratory problems. Volatile organic compounds (VOC) are produced in fracking, including known carcinogens, and toxic substances like toluene, xylene, acetone, and others. These VOC evaporate from holding ponds, get into the air and sicken anyone in their path. Holding ponds should be prohibited to protect the health of our citizens. Toxic emissions from fracking sites create healthcare costs of tens to hundreds of millions of dollars.

## **REGULATIONS NEEDED TO PROTECT US**

Without the proper regulations on fracking such as, 1) required full disclosure of chemicals; 2) required pre-drilling water testing; 3) required fugitive methane capture methods; 4) elimination of holding ponds; 5) required radiation monitoring; 6) required frequent water testing (at least 3 times a year); 7) injection well monitoring and earthquake prevention measures; 8) frequent air quality testing at each fracking site (every month during times of operation, not when they are shut down); 9) waste water treatment evaluations; 10) protections from the noise and road damage from the heavy trucking use; and 11) required procedures for handling explosions and well-blowouts, **we are creating the biggest tax increase in the history of Kansas.** The problems caused by fracking carry a high cost that we pay but never shows on our electric or gas bills. These costs are a giant tax on the people in every state where fracking is unregulated. So, **if you love high taxes, then don't regulate fracking.**

Every state and community where fracking is done has seen dangerous problems and threats to air, water and land. Many communities have said "No more!" and banned fracking. They are banning fracking and saying "No job creation or temporary boost to the economy is worth the damage being done." Farmers and business leaders are joining forces to ban fracking. THE ONLY WAY TO AVOID THE PROBLEMS WITH FRACKING, AND TO AVOID THE THREATS TO OUR FARMERS AND RANCHERS IS TO REGULATE IT USING THE RECOMMENDATIONS I PROVIDED ABOVE. Remember, **it will only take ONE ACCIDENT in the Ogalalla aquifer to threaten the future of farming and ranching in Kansas.**

# Fracking Radiation Targeted By DOE, GE

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Shale gas well. Image via Wikipedia

The Department of Energy and General Electric will spend \$2 million over the next two years to remove naturally occurring radioactive materials from the fracking fluids produced by America's booming shale-gas industry.

The New York State Department of Health has identified Radium-226 as a radionuclide of particular concern in the Marcellus Shale formation deep beneath the Appalachian Mountains.

In hydraulic fracturing operations, drillers force water and a mixture of chemicals into wells to shatter the shale and free natural gas.

The brine that returns to the surface has been found to contain up to 16,000 picoCuries per liter of radium-226 ([pdf](#)). The discharge limit in effluent for Radium 226 is 60 pCi/L, and the EPA's drinking water standard is 5 pCi/L.

Uranium and Radon-222 have also been found in water returning to the surface from deep shale wells.

In Pennsylvania, produced water has been discharged into streams and rivers from the state's 71,000 wells after conventional wastewater treatment but without radiation testing, [according](#) to the Pittsburgh Post-Gazette and The New York Times, which drew attention to the radioactive contamination earlier this year after studying internal EPA documents:

The documents reveal that the wastewater, which is sometimes hauled to sewage plants not designed to treat it and then discharged into rivers that supply drinking water, contains radioactivity at levels higher than previously known, and far higher than the level that federal regulators say is safe for these treatment plants to handle. via [The New York Times](#)

GE's [Global Research](#) lab in Niskayuna, NY has proposed removing radioactive elements from produced waters and brine using a membrane distillation system similar to conventional [reverse osmosis](#), but designed specifically to capture these radioactive materials.

GE will spend \$400,000 on the project and DOE will supply \$1.6 million. The Energy Department announced the project Monday.

The process will produce concentrated radioactive waste, which will be disposed of through [conventional means](#), which usually means storage in sealed containers for deep geological disposal.

The government is seeking to address environmental concerns without stemming a [boom](#) in cheap gas unleashed by hydraulic fracturing, or fracking, in shale formations.

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[\*\*EPA Orders Fracking Drillers To Disclose Disposal Practices\*\*](#)

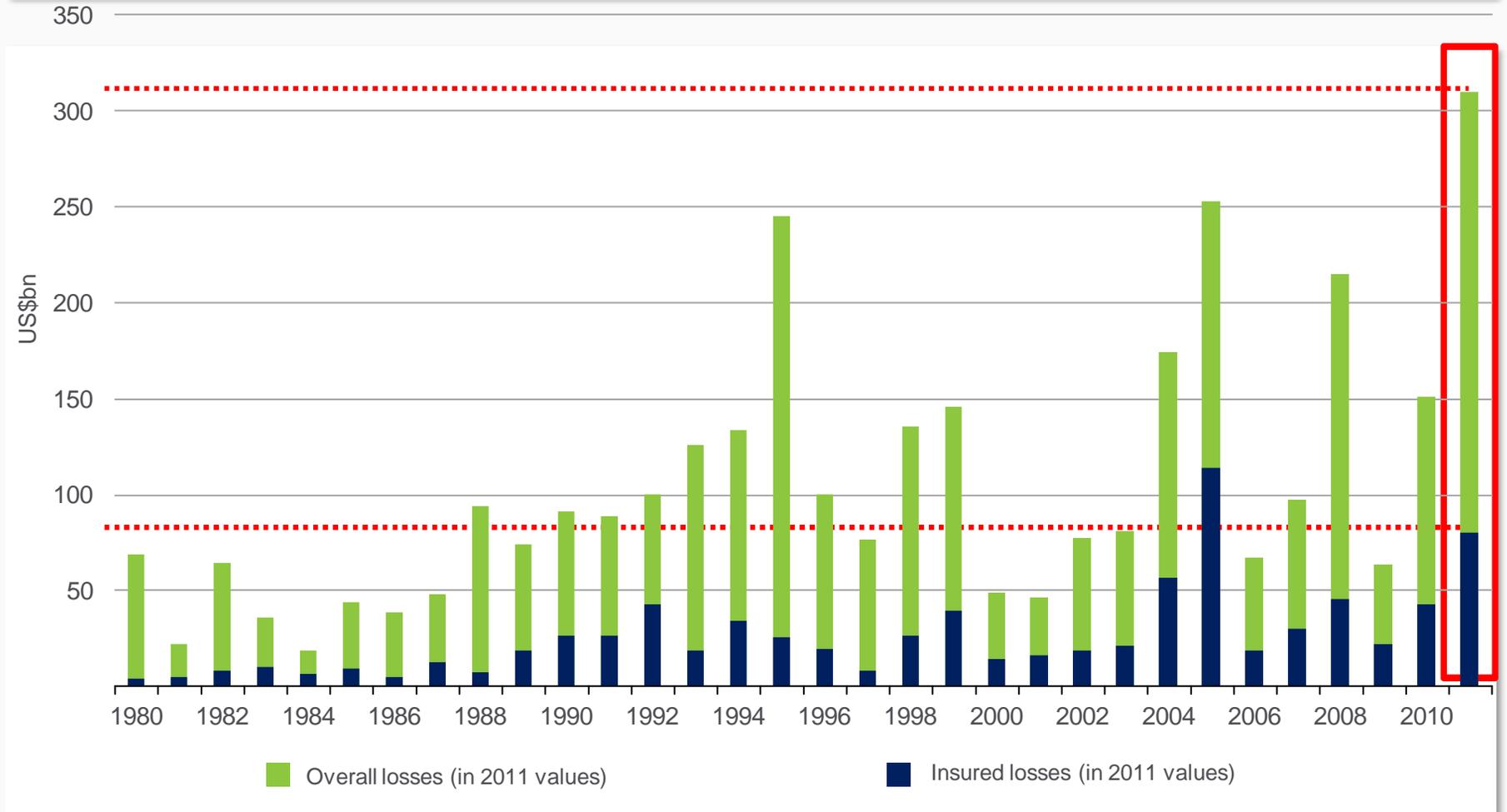
[\*\*Fracking Study May Expose Natural Gas Industry To Regulation\*\*](#)

[\*\*How to Remove Radioactive Material From Drinking Water\*\*](#)

# Worldwide Natural Disasters 1980 – 2011

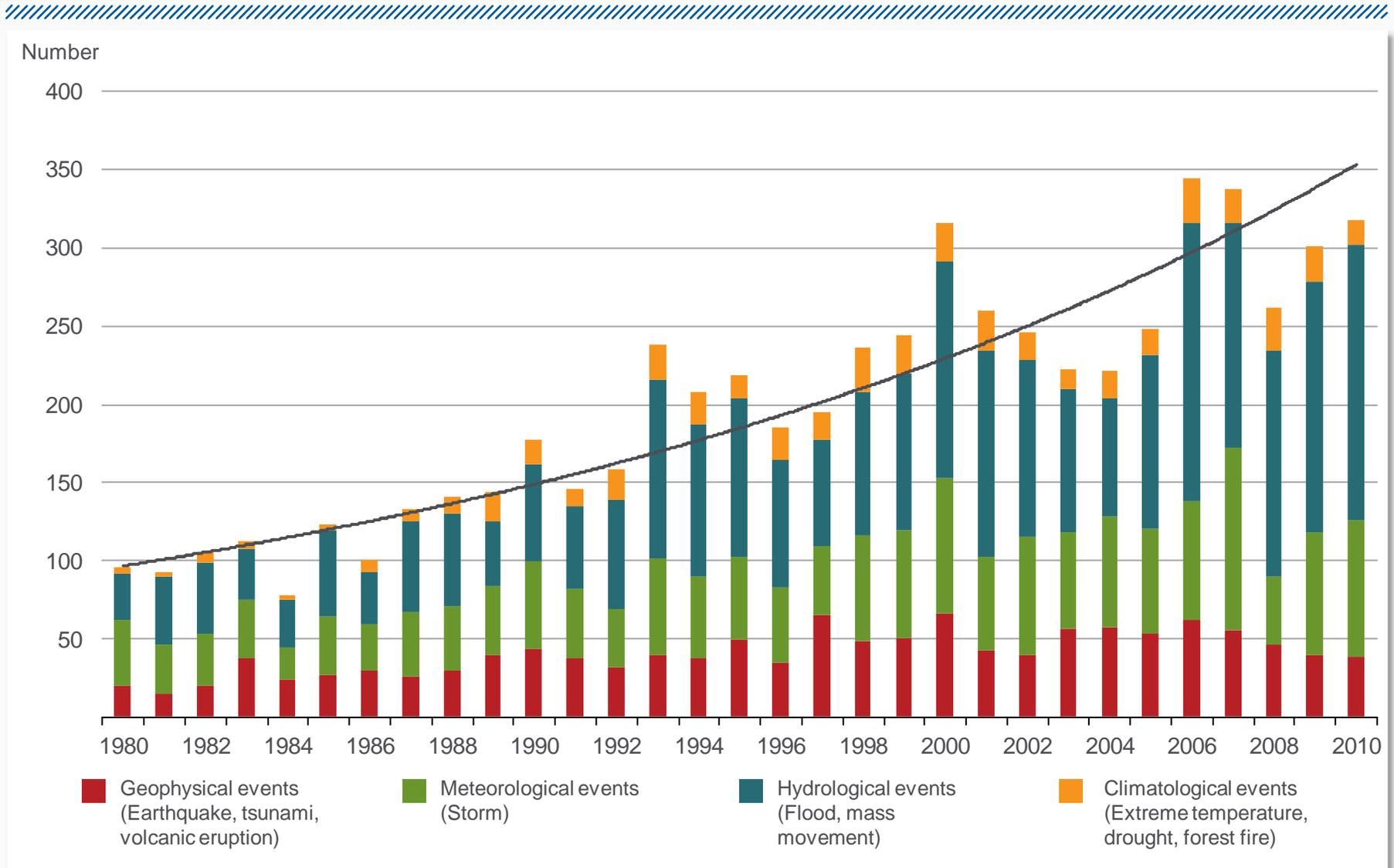
## Overall and Insured Losses

Losses in 2011 (January – September): Overall = US\$ 310bn; Insured = US\$ 80bn



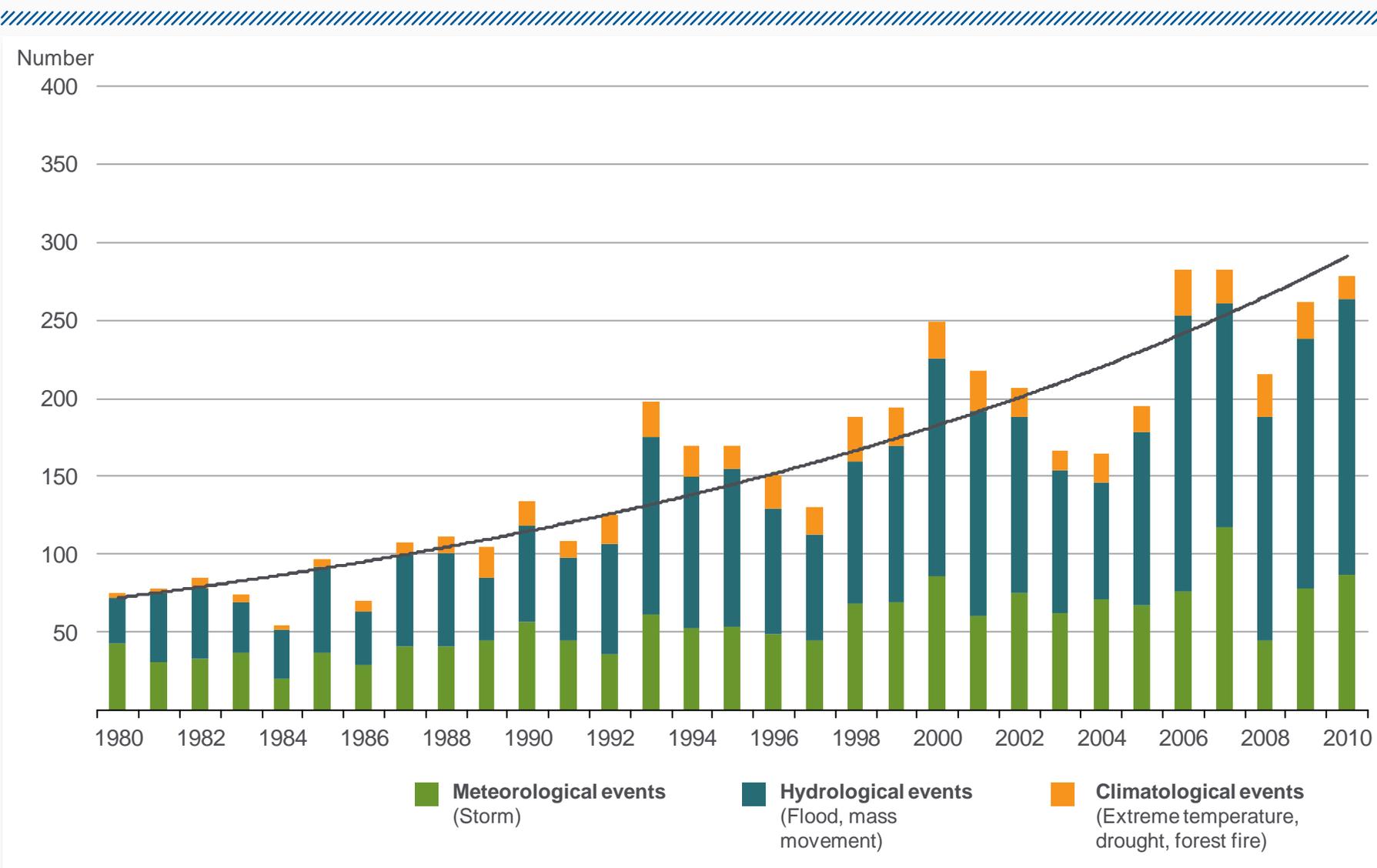
# Natural catastrophes in Asia 1980 – 2010

## Number of events with trend



# Weather catastrophes in Asia 1980 – 2010

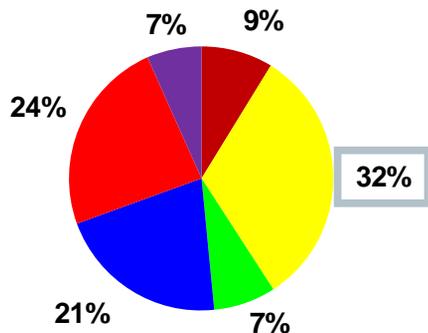
## Number of events with trend



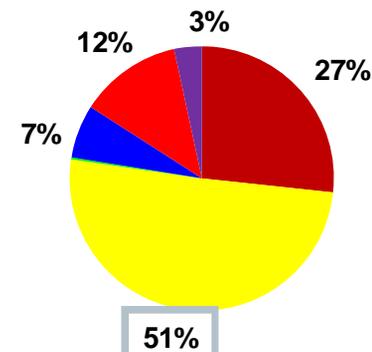
# Natural catastrophes 1980-2010

Percentage distribution – ordered by continent

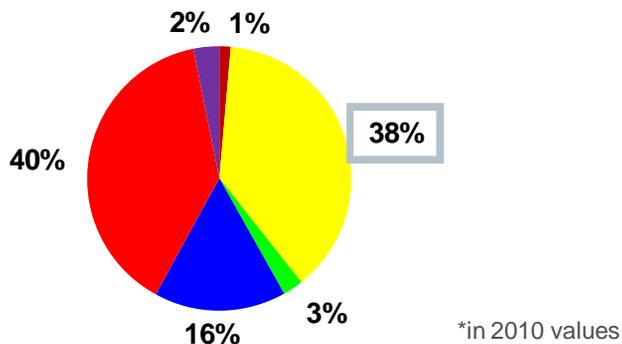
19,500 Loss events



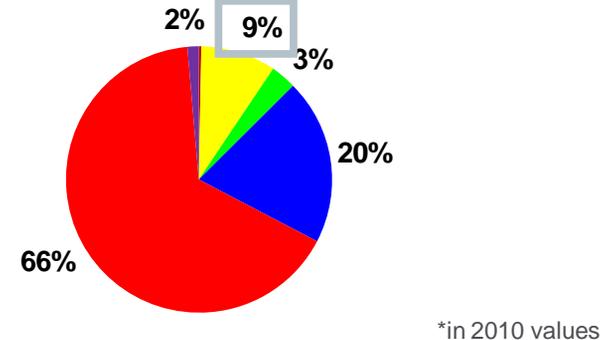
2,275,000 Fatalities



Overall losses\* US\$ 3,000bn



Insured losses\* US\$ 740bn



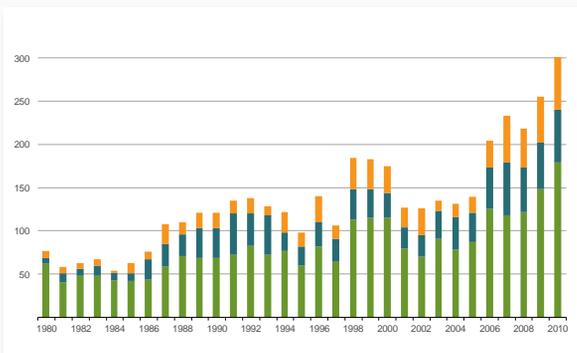
■ Africa   
 ■ Asia   
 ■ Australia/Oceania   
 ■ Europe   
 ■ North America, incl. Central America and the Caribbean   
 ■ South America

# Weather catastrophes worldwide 1980 – 2010

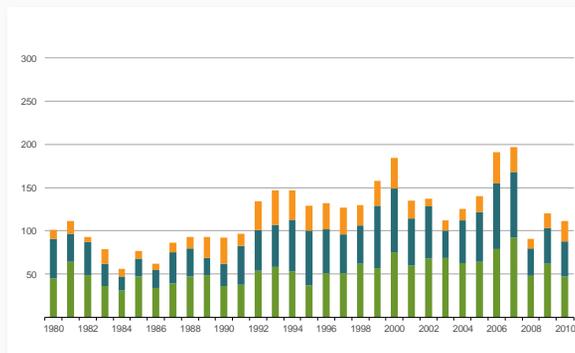
## Number of weather related events per continent



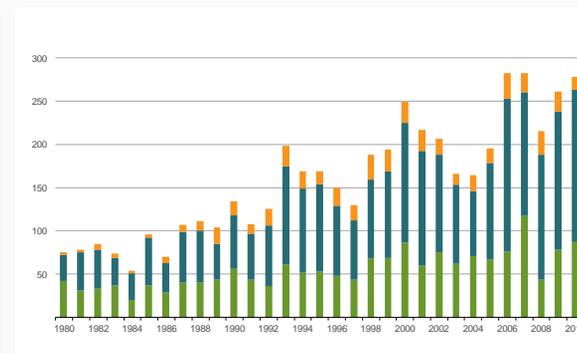
North and Central America, Caribbean (4,200)



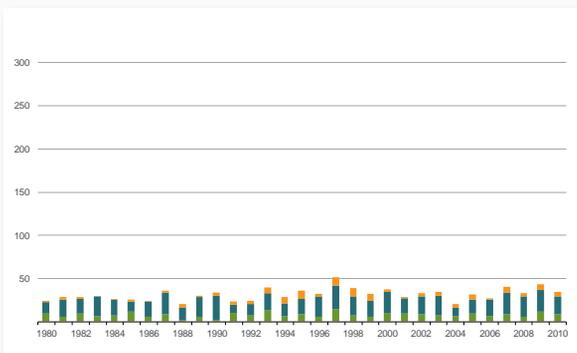
Europe (3,700)



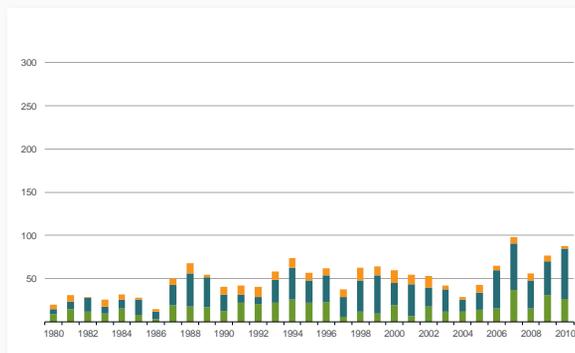
Asia (4,950)



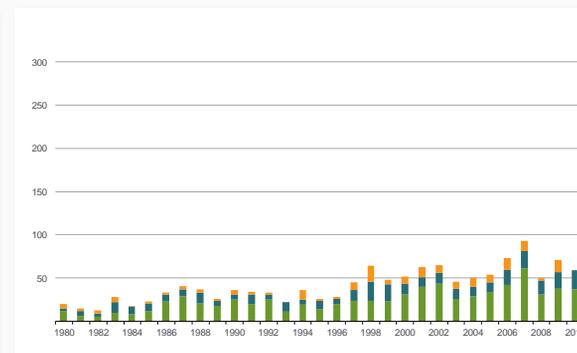
South America (975)



Africa (1,560)



Australia/Oceania (1,300)



■ Meteorological events (Storm)

■ Hydrological events (Flood, mass movement)

■ Climatological events (Extreme temperature, drought, forest fire)