

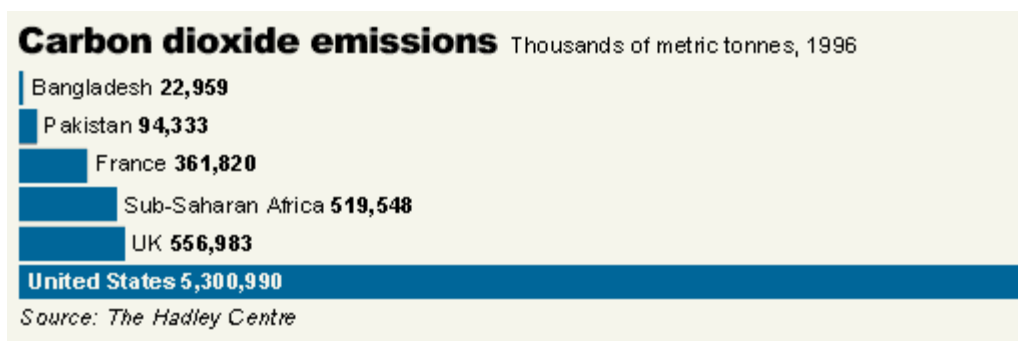
# Global Warming

There is now overwhelming consensus among reputable scientists that the atmosphere is warming and human activities are responsible. Continued, accelerating growth in atmospheric concentrations of carbon dioxide and other greenhouse gases since the beginning of the industrial revolution is well documented as are increasingly extreme, disruptive and costly weather events.

According to the Intergovernmental Panel on Climate Change, "the Earth's climate system has demonstrably changed on both global and regional scales since the pre-industrial era."<sup>1</sup> Human activities are to blame. The Environmental Protection Agency agrees, stating: "human activities have altered the chemical composition of the atmosphere through the buildup of greenhouse gases — primarily carbon dioxide, methane and nitrous oxide." Global warming and the resulting disruption in the earth's weather patterns and ecosystems will cause far-reaching impacts, which are becoming increasingly evident. It is imperative that we act now.<sup>2</sup>

Most of the blame rests on our addiction to fossil fuels. Greenhouse gases, primarily carbon dioxide, are released into the atmosphere when we burn fossil fuels such as coal, oil and natural gas to drive our industrial economy, generate electricity and power our cars and trucks. Global carbon dioxide levels are higher today than at any other point the last 420,000 years — 82% of the increase is a result of burning fossil fuels.

With only 4% of the planet's population, the United States generates more than 25% of the world's total carbon dioxide emissions. Approximately 6.6 tons (about 15,000 pounds) of greenhouse gases are emitted per U.S. citizen every year.



## Why should we care?

One effect of the increase in greenhouse gases is an increase in global temperatures. The 1990s were the hottest decade of the last millennium with eleven of the last twelve years the hottest ever recorded. According to the National Academy of Science's National Research Council, "Greenhouse gases are accumulating in the Earth's atmosphere as a result of human activities,

<sup>1</sup> IPCC, Third Assessment Report, 2001

<sup>2</sup> The major conclusion from 300 scientists and policy makers from 46 countries and the United Nations at the World Conference, Toronto, Canada, June 1988

causing surface air temperatures and subsurface ocean temperatures to rise. Temperatures are, in fact, rising.”<sup>3</sup> Scientists estimate that if the increases in greenhouse gas emissions continue unabated, global temperatures could rise between 2.5 to 10.4 degrees F by 2100.

The effects of a warmer climate span a huge range. More frequent and severe droughts and storms are already affecting agricultural productivity, water supplies, ecosystems, and human populations. Altered temperatures and ecosystems affect species’ migratory patterns, diversity and resilience to changing conditions. Warming air temperatures expand the range and annual cycles of disease-carrying organisms and invading agricultural pests and diseases to areas where they were previously unknown. Likewise, warming ocean temperatures are damaging the ocean’s ecosystems. Huge swaths of coral reefs are being bleached, leading to declining diversity and fish populations.



Polar Ice Cap: an endangered species

In fact, the impact of global warming on the earth’s oceans has the potential to radically affect human populations. Approximately 80 percent of the earth’s fresh water is contained in glaciers and ice caps; virtually all of them are melting and sea levels are rising around the world – threatening low-lying population centers. Scientists predict that during the twenty-first century sea levels will rise by between 50 centimeters and one meter. Roughly one-sixth of world’s population lives in coastal areas within one meter of sea level.

The massive influx of fresh water from melting ice may also be disrupting a massive oceanic current that depends upon a delicate balance of temperature and salinity to regulate temperatures in the northern hemisphere. Without this gigantic ocean “conveyor belt” bringing warm waters north and sending colder waters to the south, much of the Northeastern United States and Western Europe’s annual mean temperatures would be colder by twenty degrees Fahrenheit. There is evidence that the cold water flow in the conveyor belt has weakened by 20 percent in recent years.<sup>4</sup>

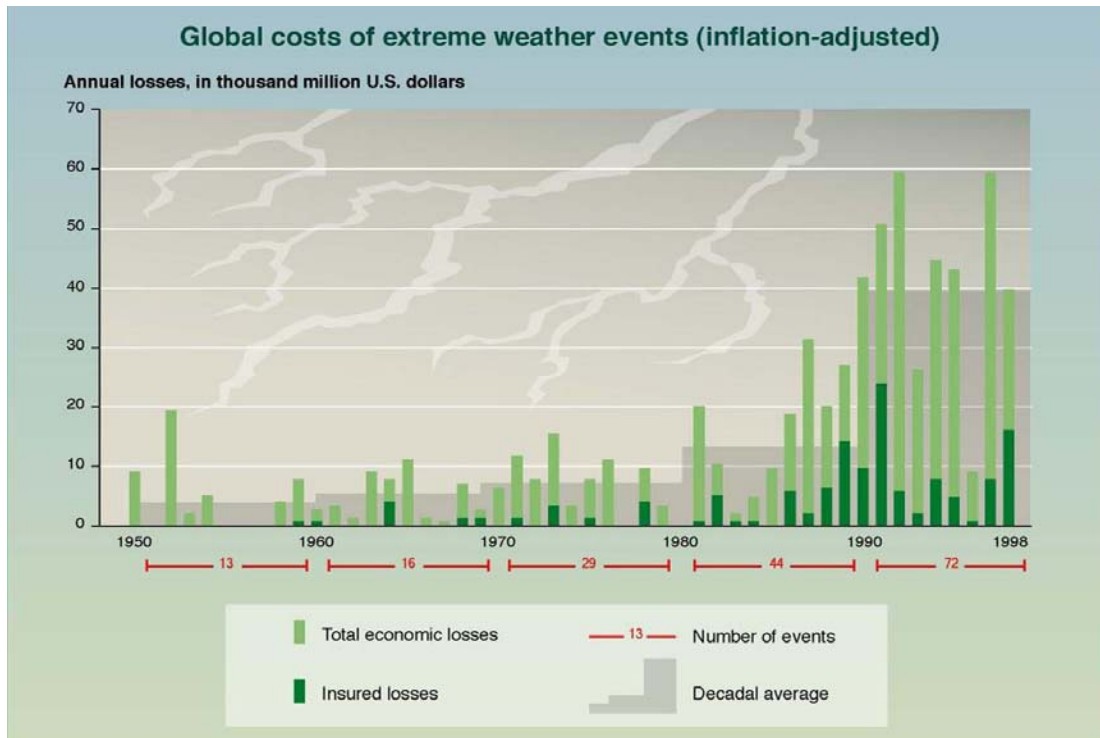
### **It’s the Economy, Stupid.**

The economic burden associated with of unstable weather is increasing dramatically. According to the International Red Cross, direct economic losses from natural disasters multiplied five fold in the past two decades alone. Munich RE, one of the world’s largest insurers estimates that the annual climate change price tag is already hovering around \$150 billion and will double to \$300 billion by 2050.

---

<sup>3</sup> Source: National Research Council, "Climate Change Science: An Analysis of Some Key Questions," June 2001

<sup>4</sup> U.S. News and World Report, April 1, 2002.

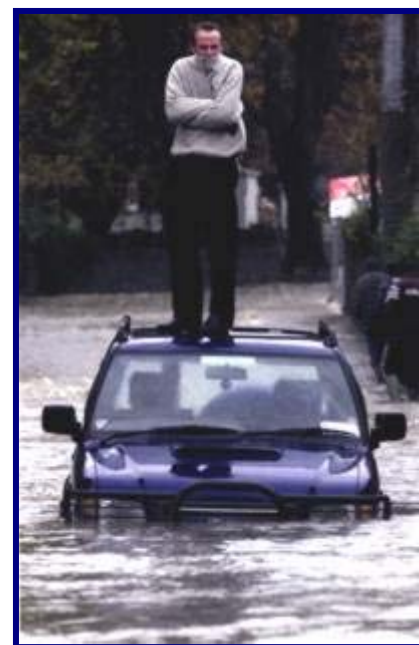


Source: Intergovernmental Panel on Climate Change

Examples of climate related natural disasters abound. For instance, from 1999 to 2002 the U.S. experienced the three most extensive droughts in the last 40 years, producing some of the worst wildfire conditions ever witnessed. In 2002, the Western U.S. saw its second worst fire season in the last 50 years; more than 7 million acres burned. Colorado, Arizona, and Oregon had their worst seasons ever with the Colorado price tag topping \$80 billion. In the same year, severe flooding in Texas, Montana, and North Dakota caused hundreds of millions of dollars in damage. Central Europe suffered unprecedented floods, considered the worst in 500 years, which resulted in \$15 billion in damage and forced hundreds of thousands of residents to evacuate their homes.

In 2003, a record heat wave devastated Europe and claimed the lives of 30,000 people. Here at home, one typically hot day that summer resulted in a surge in air conditioning demand that took down the entire Northeastern electric grid and cost an estimated \$10.3 billion.

More frequent and fierce tropical storms and hurricanes are also considered consistent with global warming. In 2004, a record 10 typhoons hit Japan and flooding was recorded across the globe. Four severe hurricanes wreaked havoc



Coming soon to a parking lot near you

on Florida and the Caribbean in a six-week period, causing more than \$20 billion in damage in Florida alone.

Natural disasters and severe weather affect families and communities all over the world; populations that depend directly on natural resources for their livelihood and those who live in the developing world will be the most vulnerable and hurt by these changes.<sup>5</sup> Yet, no one will be immune to the effects of global warming. Rising sea levels, property damage, loss of agricultural output, economic losses, outbreaks of infectious disease, drought, floods, and famine — are all being felt now and are expected to worsen in the coming decades. In fact, many analysts predict that global warming will eventually top terrorism as the major global security issue as populations are dislocated and families are forced to migrate due to flooding, drought, natural disasters and increasingly limited livable territory and conflicts over increasingly scarce food, water and energy resources become inevitable.

### **So what can you do?**

At the 2000 World Environmental Forum in Davos, Switzerland, the world business and government leaders identified global warming as the top challenge facing the world. Still the U.S. Federal government has largely been silent on this issue. Meanwhile, U.S. States, cities, corporations and individuals have begun to fill the vacuum left by the White House. In 2003, 24 states introduced 90 bills that would build frameworks for regulating carbon dioxide. Twelve states and three cities have sued the U.S. EPA for failing to regulate CO<sub>2</sub> emissions under the clean air act. More than 160 cities around the country – including Boulder – have now made aggressive commitments to reduce greenhouse gases in compliance with the Kyoto Protocol. And, with Kyoto now in force in most of the developed world, a growing list of multinational corporations have expressed concern about the high cost and burden of complying with a patchwork of regulations in the U.S. and abroad and have expressed a preference for Federal regulation now rather than later.

In poll after poll, a majority of Americans say they consider themselves to be environmentalists and "prefer to achieve energy security by developing alternative sources of energy and increasing efficiency, rather than drilling for more oil."<sup>6</sup> Yet many people either don't have time, don't feel that their small contribution will make a large enough impact, or they simply don't know to begin to reduce their climate and environmental impact.

However, making small changes is easy and the impacts really do add up. If every household in the U.S. replaced one incandescent light bulb with a compact fluorescent light bulb (CFL), it would prevent enough pollution to equal removing one million cars from the road. In fact, there are many simple, cost-effective actions that individuals and businesses can take to reduce their environmental impact. Here are some actions that everyone can take that are low-cost and/or can pay for themselves with energy savings.

---

<sup>5</sup> World Resources Institute.

<sup>6</sup> Poll of 1,000 registered voters who were surveyed between December 15-20 by the Mellman Group.

- Increase the efficiency of your home or business - weatherize windows and doors or install energy-efficient windows; add insulation to walls, basement, and attic; seal air leaks
- Install energy-efficient lighting, heating and appliances
- Turn off and unplug unused appliances and other equipment that draw power
- Keep heating and cooling equipment well-maintained
- When making purchasing decisions, always consider efficiency and other environmental factors: look for energy star appliances, drive a fuel-efficient vehicle, purchase compact fluorescent lighting, etc.
- Consider alternative transportation whenever possible: carpool, take the bus or ride your bike
- Work with your community to advocate climate-friendly policies, programs and incentives
- Recycle!
- Volunteer and contribute to environmental and clean energy non-profits
- Offset your energy use and transportation impacts by participating in your utility's green power program or purchasing renewable energy credits